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Charting Our Course[1]

MABLE MACLACHLAN

Director of Dietetics, University Hospital, University of Michigan, Ann Arbor

THIRTY years ago the American Dietetetic Association was organized. We can be proud of the high standards set by the pioneers in our profession, and we can be proud of the progress and achievements of the intervening years. We should honor the strong, courageous, guiding hands which have led us to have the present high respect which we command from our sister professions. It is my hope that during the past year we have added to the stature of our Association in some degree.

To the person of twenty-one, thirty years of age looks old and mature, but to the person or association of fifty years or over it looks rather inexperienced. At thirty we have had our basic training and some experience. But training never ceases and experience should continue to alter and improve our plans and decision. We are still on the lower rungs of the ladder of experience.

Age, however, is not the only maturing factor. World conditions greatly affect situations, experiences, and circumstances. When practical-minded scientists predict that interplanetary travel is an inevitable development of present day progress in this century, does it not stimulate us to attack and solve any problems which may look insurmountable?

At thirty years of age our Association finds itself in a quickly changing world. We are being buffeted by world influences and economic pressures. Paradoxical as it may seem, many of the problems which are of immediate concern to members of our profession are due in large measure to progress. Progress in any line brings new problems in its wake. It is by the solution of these problems that progress is achieved. Problems spur you on and act as a whip to keep you from sinking into a feeling of unconcern or a feeling that everything is secure and running smoothly. The changes which have taken place in the knowledge, techniques, and tools of our profession stand out prominently, but have these changed the philosophy of the professional person? Let us review one definition of a profession. A profession, according to an eminent jurist, "is an occupation requiring extensive preliminary intellectual training, pursued primarily for others and not merely for oneself and accepting as the measure of achievement one's contribution to society rather than individual reward." This definition is distinctly idealistic, but does not the fact that we are a profession mean that we have ideals?

As President-Elect and during the past year as President I have had the rich opportunity to become familiar with all the various phases of work carried on by our Association. It has broadened my understanding of many problems. I appreciate the spirit of professional loyalty which is the motivation of those who are constantly striving to make the profession of dietetics a better, more worth-while field for a new generation of dietitians. I appreciated the gracious hospitality of the state associations I visited and the privilege of meeting many of our members in their home environment. It was thus possible to become better acquainted with local problems and points of view. I had the honor to meet with the newest affiliated state association, Mississippi. The enthusiasm and professional spirit of these dietitians will quickly make their influence felt in their state.

Many problems have been attacked this year. Some will require more than one year to solve. An awareness of the need for emphasis on public relations has been growing for several years. Before embarking on such a program, it was necessary to clarify some of the basic considerations. A committee was appointed to define and outline a public relations program. The objectives for such a program were stated by this committee as follows: "Believing that excellence of professional work, high professional rating, and an active professional organization are the best insurance for growth of the dietetic profession, the purpose of a public relations program is:

(a) To strengthen the position of the dietitian.

(b) To promote better understanding and recognition of the dietetic profession for its actual and potential contribution to the improvement and maintenance of national health.

(c) To help build the profession in numbers through an active and effective recruiting program."

[1] President's address. Read before the House of Delegates, American Dietetic Association, Philadelphia, October 13, 1947.

The urgent need for interesting more young women in our profession makes the need for recruitment keenly felt at the present time. The young high school girl needs to be informed about dietetics as a profession through the school vocational guidance program. Many of the state associations have initiated programs in which contacts are made with high school girls, teachers, and vocational guidance leaders. This work needs to be enlarged and an effort made to contact every high school in the country.

Much has been done through our Association headquarters office better to inform hospital administrators, public health workers, government officers, and many others of the training, membership requirements, and types of positions held by members of our profession. The development of informative material for use in recruiting has been concentrated in our central office. The next administration will decide whether specially trained personnel are needed to aid in this program.

Because of improved techniques in communication, a premium seems to have been placed on publicity and propaganda in promoting any cause. These have their place, but they cannot be expected to build an enduring structure of professional prestige. This rests only on a sound foundation of widespread public service. Professional prestige must begin at home. A heavy responsibility for its development rests with the individual dietitian.

A special committee for advancing professional status of the dietitian and for studying the economic status of the dietitian in society was appointed and will report its findings at this business meeting. Its work consisted of a statistical study to determine the present situation in regard to the economic standing of the dietitian. Salaries were compared on the basis of years of experience and amount of responsibility in the different geographical divisions of the United States. This study indicates a wide range of compensation for like responsibility. It suggested that there is a sequence of responsibility with approximate salary scales. It compared similar working situations in different areas of our country. While as an association, we are appropriately concerned with the material welfare of our members and feel the need for a compilation and exchange of information regarding compensation statistics, as a professional association we need to explore carefully and undertake only with extreme caution any action which will lower our professional prestige.

During the past year our Association has participated in many cooperative efforts with other professional groups and organizations. We have played our part in helping to create an intelligent understanding of the important role our profession can play in the national and international scene.

(a) A joint committee with the American Home Economics Association has presented a report on proposed standards for the selection of supervisory personnel for school lunch programs. Legislative support was given the bill requesting an additional appropriation for the school lunch program for last year and urging the continued support of the school lunch program by federal appropriation for next year.

(b) A committee of the Diet Therapy Section has worked with the American Diabetes Association to establish a standard classification for fruits and vegetables.

(c) Several members are working on a committee under the Food and Nutrition Board of the National Research Council on "How to improve institutional feeding in small institutions."

(d) Our status in the American Association for the Advancement of Science has been changed from that of an associated society to an affiliated society. This permits us to have one representative on the council. A yearly program on nutrition will be arranged and presented by our Association.

(e) We were represented by delegates at the UNESCO conference in Philadelphia and at the Mountain-Plains regional UNESCO conference in Denver. Our part in this plan will be to promote international understanding through exchange of persons in our profession, to assist in arranging foreign scholarships, and to "endeavor to stimulate and coordinate American voluntary efforts on behalf of education in war-torn lands."

(f) Tying up with this international program was the appointment of a foreign scholarship committee. Its task was to outline a program to assist in the training of dietitians from foreign countries and thereby to enable them to start training programs in their own countries. One of the stumbling blocks that was at once discernible was that the best trained students of other countries do not meet the academic requirements established for entrance to the approved training courses in our country. It has been felt by the committee that wherever possible foreign students should meet our requirements or should parallel their training with the necessary academic work. However, with the pioneer workers in other countries, we may not always be able to hold rigidly to this ideal.

Our legislative committee has been very active. Perhaps first and foremost in importance was the passage of an act establishing the Women's Medical Specialist Corps in the Army. By this act our profession has reached another milestone—the gaining of permanent legal status for dietitians.

Other bills followed by the legislative committee and given support by state associations were (a) to create an independent national health agency and coordinate the health functions of the federal government; (b) the United States Information and Educational Act of 1947; and (c) the National School Health Service Act of 1947. Support was urged for the Bureau of Human Nutrition and Home Economics.

A study has been made by still another committee of requirements for the possible establishment of additional training courses in food clinics.

We have been very fortunate in that we have not had any major changes in our headquarters staff. Gladys E. Hall has continued her splendid work as Executive Secretary which is an overall piece of work in carrying out the many plans of the Executive Board. Lucille Refshauge's continued efforts in maintaining the standards of approved courses, checking membership credentials, and aid to the foreign scholarship committee are most valued. Mildred Egeberg, working against odds arising from a shortage of office employees, nevertheless kept the wheels of the office in productive motion. Marguerite Paplow was appointed as Assistant to the Educational Director. Her particular duties are concerned with the preparation of membership applications. Margene Wagstaff was appointed as Publications Assistant early in 1947.

One phase of our educational program is our publications. Only about one fourth of our members ever come to conventions, but each one received monthly the JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION. Our Editor and JOURNAL staff are to be congratulated on the excellence of this part of our program. They have covered the various interests of our members in a comprehensive manner. As an educational tool our JOURNAL has great potentialities. It is by the active contributions of members that the JOURNAL can realize its full possibilities.

The manual for training employees and the manual for teaching nutrition and dietetics to student nurses are at the publishers. The leaflet "Dietitians in Demand" replaces "Dietitians Are Urgently Needed." More than 20,000 of these have been distributed since the first printing. Revision of the book *Quantity Food Service Recipes* has been started. A new bibliography, *Dietetics as a Career*, is available for vocational information.

The foresight and good judgment of last year's Executive Board in appointing Bertha Biltz as Administrative Adviser has been proved by the contacts she had made for our Association and the help she has given to the members.

The office work involved in caring for the routine details of our Association of 8000 members is tremendous. As the membership and work carried by the office has increased, together with the moving of the JOURNAL office into already full quarters last year, it was necessary to look for more space. Recently it was possible to rent additional space adjoining our present office.

The finances of our Association need the careful consideration of all members. As expenses increase and our program of work expands, it will be very necessary to survey our aims and objectives critically and to allocate funds to those projects which will give the greatest return in membership satisfaction and in furthering the objectives of our Association.

The first big problem to face me after taking office was to find a meeting place for this convention. As you remember last year in Cincinnati, the California delegates issued a very cordial invitation to meet with them in San Francisco. We promptly accepted and started to lay our plans. Dates were shifted from our usual October time to August, but it was impossible to find adequate accommodations for our convention. At the time of the mid-year meeting of the Executive Board in February we were still frantically searching for a meeting place. Our convention has grown to such proportions that the hotel-type of convention is no longer possible. This year we are making the transition to a convention-hall-type of meeting. There are adjustments to be made by each of us. Philadelphia met our needs and the Philadelphia dietitians gave us a friendly welcome. They had a late start in making convention plans, but they have worked earnestly and hard, and the smoothness with which arrangements have gone indicates the effort they put forth.

The problems which face dietitians today are different in character from those which our predecessors encountered. Their method of approach and ours too must be characterized by a diligence in the search of knowledge and truth.

"This day we sailed on," was an entry which Columbus put down in the private log of his first voyage. He had set his course in the direction which his own intuition and logical intelligence led him to believe was the right one, and with dogged courage he kept going. The words are not especially comforting but indicate faith and an inner integrity. May we, as an association, say with Columbus, "This day we sailed on"?

Ice Cream Consumption

In 1946, according to the Department of Commerce, the per capita consumption of ice cream in the U. S. amounted to 21 qt.—a total of nearly 3 billion qt. Vanilla, the most popular flavor, accounted for 50 per cent of this quantity, followed by chocolate. Third choice was strawberry.

Recent Studies on Nutritional Requirements During Reproduction and Lactation[1]

B. S. SCHWEIGERT

Department of Biochemistry and Nutrition, Agricultural and Mechanical College of Texas, College Station

IN PRACTICAL nutrition the adequacy of the diet for all phases of the life cycle is of paramount importance. Unfortunately, few experiments have been conducted which are this inclusive. Recent studies conducted on the value of various diets for growth, reproduction, and lactation emphasize the differences in requirements for the different stages of the life cycle and also emphasize the need for considering the influence of the composition of the diet as a whole in establishing the requirement for any one nutrient.

The use of different species of animals has aided greatly in elucidating the necessity of various chemical entities in the diet for optimum nutrition. Furthermore, apparent differences in the dietary requirement for certain nutrients, such as niacin, for various species have stimulated investigators to find an explanation for these differences. Thus, the level of tryptophane has been shown to influence markedly the niacin requirement. In certain species it has been found that when sufficient tryptophane is present no dietary source of niacin is needed. In most of the experiments of the type illustrated, the growth rates of weanling animals have served as the major criteria for evaluating the nutritive value of the diets used. In many cases, however, reproduction and lactation studies, particularly with the rat, have revealed differences in the nutritive value of diets which did not appear where the growth rates alone were studied in young animals fed the same diets.

It is generally recognized that excellent growth can be obtained with rats fed purified rations which contain adequate protein, minerals, refined carbohydrates and fat, fat soluble vitamins, and the following B vitamins: thiamine, riboflavin, pantothenic acid, pyridoxine, niacin, and choline. A small increase in the rate of growth can be obtained when certain liver preparations are added to a diet of this type (1–3). These observations have stimulated interest in evaluating the adequacy of purified rations for the rat when more exacting criteria are utilized, namely, reproduction and lactation. With the use of these criteria it immediately became evident that pteroylglutamic acid (folic acid) and possibly biotin were needed for optimum reproduction and lactation when a purified type of ration was used (4–6).

In other studies attention has been focused on the evaluation of the adequacy of rations for reproduction and lactation in which the components of the ration were largely natural foods. Thus it has been observed that rations composed of soybean oil meal, corn, alfalfa leaf meal, and minerals failed to support successful reproduction and lactation (7, 8). Furthermore, none of the recognized B vitamins improved the lactation results significantly. These findings and others suggest that the dietary requirements for certain factors previously unrecognized may be markedly different depending on the composition of the ration used.

The experimental techniques used in evaluating the reproduction and lactation performances of the rat are quite varied. The following examples illustrate the variations in procedures:

(a) Feeding of the experimental diets to the females for several generations (9, 10). Data are also obtained on the length of life of males and females, food efficiency, weight of young at weaning (twenty-eight days), number of young born and weaned per female, the percentage of young weaned, and the length of the reproductive cycle.

(b) Depleting adult or weanling females of the factor or factor being studied by feeding the basal ration for varying periods of time (7). Suitable groups of females are then fed various supplements, usually at breeding time, and their performance is compared with that of the unsupplemented animals. In this approach the males used would be fed a stock diet and are allowed access to the experimental rations for short periods only when the females are bred.

(c) Using five females and one male for each experimental group (11). The animals may be

[1] Received for publication on August 28, 1947.

started on the experiment at weaning age. The amounts of vitamins given (other than the one being studied) are increased successively during the stages of growth, reproduction, and lactation.

(d) Obtaining data on the reproductive performance of both males and females and on the lactation of the females (12, 13). For males, the criteria used for reproduction are the percentage of positive matings and the percentage of mated normal females showing implantation. For the females, the following data are obtained on reproduction and lactation: average size and viability of the litter, weight of young at birth and weaning (twenty-one days of age), percentage of young weaned, and weight change of the lactating mother. The latter criterion has been successfully used by these workers in determining the adequacy of various rations in short term experiments (6, 13).

(e) Using eight or more weanling females in each experimental group. As developed in this laboratory, in this method the rats are weighed each week and bred at twelve weeks of age. The males are fed a stock ration and are rotated among the experimental groups at frequent intervals, usually every five days. When the females have gained sufficient weight to ascertain pregnancy, they are placed in single cages equipped with wire screened bottoms. After parturition, the young are counted, the number of dead young recorded, the entire litter and also the female are weighed. The number of young is reduced to six at one day of age in order to allow a more uniform procedure for evaluating the lactation performance. The young are weighed on the first, seventh, fourteenth, and twenty-first days of age and weaned at the latter age. The female is put back with the male immediately and allowed to have second and third litters. In this manner data are obtained on the following: growth of females, number of young born and number alive for each of three litters, growth curve for the young until weaning, weight change of the female during each gestation and lactation period, percentage of young kept that are weaned, and miscellaneous observations such as resorptions, gross symptoms, and so on.

From these brief descriptions it may appear difficult to evaluate the data obtained with the use of such varied criteria. Considerable variation is observed in the performance of females fed the same ration, particularly during lactation, and more observations are needed than in growth experiments. No one criterion seems sufficient for use in evaluating the adequacy of the diet for reproduction and lactation. The weight change of the mother during lactation and the weight of the young at weaning are very valuable criteria. However, comparisons should be made when the females wean five young or more in each litter.

In studies of lactation it appears highly desirable to reduce the young that each female is allowed to raise to a uniform number, usually six. It is also considered desirable to allow each female to raise several litters successively, in that the results obtained in the first litter are often superior to the results in subsequent litters when the rations are not adequate in all nutrients. This applies particularly when the females are fed the experimental diets from weaning. When the females are allowed to raise several litters over a period of time, a lower percentage of the young are weaned than if the females are allowed to rear only one or two litters. When the females are rebred immediately after the young are weaned, a more drastic test of the adequacy of the ration is achieved than when a rest period is allowed. Also, when the animals are depleted of dietary factors prior to breeding or when more than six young are given to each female to raise, a more exacting test is performed.

It should be pointed out, however, that where the results obtained are similar with the criteria established in a particular investigation, more exhaustive tests may be desired and the conclusions should be made with caution on the adequacy of diets with limited observations. Undoubtedly the magnitude of the differences in performances obtained with the various diets motivates the extent to which the techniques are used. Thus when diets are compared which differ widely in their ability to support reproduction and lactation, less extensive testing is needed. Conversely, several generations and large numbers of breeding tests may be required to establish small differences in the nutritive value of experimental diets or when the incidence of certain abnormalities is very small (15).

Several recent studies have been conducted which afford valuable information on the nutritional requirements of the rat for successful reproduction and lactation. Several experiments are cited here to illustrate the results obtained with several types of diets. The work reviewed will be limited to recent studies on the quality and quantity of protein and unidentified factors.

Unfortunately data are meager on the quantitative requirements of the B vitamins for reproduction and lactation. It is well established, however, that diets which allow satisfactory growth may be entirely inadequate for reproduction and lactation. For example, the addition of biotin and pteroylglutamic acid (folic acid) to purified rations does not increase the rate of growth of the young rat but markedly improves the reproductive and lactation performance, particularly the latter (4, 5, 6). The results with biotin appear, however, to be inconclusive.

That factors in addition to biotin and pteroylglutamic acid are needed by the rat for satisfactory lactation has been reported by Sporn *et al.* (3). Liver was shown to be a rich source of these factors. With the use of a purified ration containing ten B vitamins (including pteroylglutamic acid and biotin), 73 per cent of the young were weaned. When 0.5 gm. per

day of fresh liver was fed in addition to this ration, the females raised 95 per cent of the young. These percentages are based on results obtained with twelve litters per group, and it was stated that approximately the same results were obtained in another series.

Nelson and Evans (6) have also shown that the addition of liver concentrates to rations also containing folic acid improved the lactation performance. The weight change of the females during lactation was used as the major criterion, and the following results were obtained: with the basal ration (no pteroylglutamic acid added), the weight loss of females averaged 26.0 gm; with the basal ration plus 275 mcg. of pteroylglutamic acid per 100 gm. of ration, there was a weight increase of 6.3 gm.; with the basal ration plus liver concentrate equivalent to 275 mcg. of pteroylglutamic acid, there was a weight gain of 16.2 gm.; and with the stock ration, there was a gain of 19.6 gm. The average weight of the young at weaning was also greater for those females fed the liver concentrate than for those fed an equivalent amount of synthetic pteroylglutamic acid. Previous workers have shown that liver concentrates improved the lactation performance of the rat (16, 17); however, crystalline pteroylglutamic acid was not included in the ration since it was not available at that time. Thus, the evaluation of rations in terms of their ability to support reproduction and lactation has afforded evidence of the existence of as yet unidentified nutrients needed by the rat.

Results obtained with diets comprised of natural rations also indicate that liver or other sources of unrecognized nutrients are highly beneficial. A ration composed of all plant material [75.34 per cent yellow corn, 17.50 per cent soybean oil meal, 5.0 per cent alfalfa leaf meal, and 2.16 per cent minerals was used by Spitzer and Phillip (7, 8)] and was found to be inadequate for reproduction and lactation. The addition of vitamins, fatty acids, and other minerals improved reproduction, but the females still did not lactate normally. Lactation was improved either by the addition of liver concentrates or 5 per cent casein. Only 3 per cent of the young from sixty-five females fed the basal ration were weaned. The addition of purified casein (5 per cent alcohol extracted casein) improved the lactation performance slightly in that 25 per cent of the young were weaned, but when 5 per cent crude casein was added, 61 per cent of the young were weaned. Similarly, when 5 per cent liver extract was added to the basal ration, 69 per cent of the young were weaned. Other natural products, such as yeast, fish products, and additional alfalfa meal, also improved the performance observed with the basal ration.

It may appear that the percentages of animals which were weaned are somewhat low even when the above supplements were added. However, all animals were fed the basal ration for from two to four weeks prior to mating. This technique is more severe than when the supplements to be tested are fed from weaning to the age of breeding rather than from the time the animals are mated. Since the basal ration may be somewhat low in protein (15.5 per cent) and since corn, which contributes 40 to 50 per cent of the total protein, is known to be low in lysine and tryptophane, it is possible that the beneficial results obtained with liver may be partially explained on the basis of protein supplementation. It is quite likely, however, that a combination of an inadequacy of amino acids and unknown factors is involved.

Other work has also shown that the addition of liver to a cereal-soybean oil meal ration markedly improved the lactation performance (18). The liver products contributed only 1 per cent additional protein. Further work will undoubtedly clarify the problem. It is significant to note that these workers (7, 8) have obtained a variable response with different samples of alfalfa leaf meal and liver which suggests that nutrients needed in addition to the basal ration may be destroyed in processing or storage. Factor "x," which is present in samples of crude casein and liver fractions, has been shown to improve growth and lactation performances (19). Whether the factors present in liver which are needed to supplement these rations are similar to this factor remains to be elucidated.

Sherman and co-workers have studied the adequacy of diets composed of whole wheat, milk, and salt for the rat (9, 10). A diet composed of one sixth milk and five sixths wheat plus salt added at 2 per cent of the weight of the wheat (Diet A) was described as adequate for growth, reproduction, and lactation, but feeding a diet composed of one third milk and two thirds wheat (Diet B) improved the performance. Thus, the average number of young born per female was 5.5 when Diet A was fed, and 6.5 when Diet B was fed. Forty-eight and 62 per cent of the young were weaned when the females were fed Diets A and B, respectively. Similarly, the average weight of the young at weaning (four weeks of age) was 33.2 and 39.8 gm. for the two groups, respectively. Although the results obtained with Diet B were superior to those observed with Diet A, the performance does not appear to be optimal.

In this laboratory the value of adding meat to diets similar to those used by the above investigators has been studied (14). Some of the results obtained are shown in Table 1. A description of the experimental techniques used is given above. In this work canned beef round was added at the expense of one sixth of the wheat on a caloric basis. It is significant to note that the addition of meat markedly improved the performance of the females as compared to those receiving wheat and milk only. The supplementary value of the meat was also greater than that observed with an equivalent amount of milk. The superior

TABLE 1

Supplementary value of meat in rations containing milk and wheat for growth, reproduction, and lactation in the rat

DIETARY REGIMEN	AVERAGE RATE OF GROWTH OF FEMALES (6 WEEKS)	AVERAGE LITTER PER FEMALE	YOUNG WEANED*	AVERAGE WEIGHT OF YOUNG AT WEANING (21 DAYS)
	gm./wk.		%	*gm.*
$\frac{1}{6}$ whole milk powder + $\frac{5}{6}$ whole wheat	15.2	8.0	52	24.0
$\frac{1}{6}$ milk + $\frac{2}{3}$ wheat + $\frac{1}{6}$ meat**	22.5	11.5	85	43.0
$\frac{1}{3}$ milk + $\frac{2}{3}$ wheat	20.2	8.6	83	39.7
$\frac{1}{3}$ milk + $\frac{1}{2}$ wheat + $\frac{1}{6}$ meat**	24.4	10.5	80	43.8

* All litters reduced to six young at one day of age.
** Added isocalorically at the expense of the wheat.

performance of animals in this laboratory which were fed rations similar to those used by Sherman and associates may be at least partially explained by differences in the strain of animals used, methods of preservation of the whole milk powder, or in the experimental conditions used.

Either or both of two explanations are probable for the supplementary value of the meat observed: the quality and quantity of protein, and/or unknown factors contributed by the meat. The addition of the known vitamins and a mineral mixture did not improve the performance of the animals fed the wheat-milk rations. The wheat-milk rations may be low in protein. The two rations made up of one sixth and one third milk contained respectively, 15.2 and 17.4 per cent protein, while the corresponding wheat-milk-meat rations contain 19.1 per cent and 21.4 per cent protein respectively. Furthermore, wheat is rather low in threonine and lysine, while meat protein is a good source of these essential amino acids. It is of interest to recall that Spitzer and Phillips (7, 8) observed that 5 per cent casein markedly improved the lactation performance of rats fed rations containing approximately 14 to 16 per cent protein. Thus it appears, at least in cases where large amounts of cereal grains are included, that 18 to 20 per cent protein may be the minimum amount necessary for successful reproduction and lactation.

The value of canned beef in terms of its content of unknown factors necessary for reproduction and lactation should not be overlooked. It may be that the wheat-milk rations are somewhat low in these factors and that at least some of the beneficial effects observed for meat can be attributed to this. Since liver is known to be a rich source of these factors, it seems likely that other animal tissues would also contain them. What effect processing the beef would have on these factors is, of course, unknown. A combination of a suboptimal level of protein and as yet unrecognized factors may also be the explanation. Work is now in progress to clarify the nature of the nutritive factors involved.

It can be seen, therefore, that with the use of several types of rations, including those composed of natural foods, the level of protein and of unknown nutrients has received considerable attention. The use of diets composed of natural foods offers valuable information on not only the proper selection of dietary components from a variety of foods, but also on establishing the nature of the nutrients contributed by each food. Reproduction and lactation studies with rats have clearly indicated that as yet unidentified factors are needed in addition to known nutrients. The influence of the composition of the diet, either purified or composed of ordinary food materials, on the requirement for known or unknown factors is not well defined. Further, the explanation for an apparent increase or decrease in the requirement of any nutrient may be based on the need for the nutrient in metabolizing certain substances present in variable quantities in the diet, on the amount synthesized and destroyed by microorganisms in the intestinal tract, or on other even more obscure manifestations.

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Community Nutrition Institute at Syracuse University

In an attempt to revitalize the Nutrition Committee of Syracuse and Onondaga County, New York, a survey was made of the community agencies and organizations which were or should have been interested in the nutritional status of their community. It was found that there was little consciousness of specific need and that when an agency did realize this, it lacked either personnel or facilities to handle the situation and had no idea as to what cooperating agency might supply help. Because of the need of such workers for some definite orientation toward their community and its nutrition needs, the idea of the first annual Community Nutrition Institute was conceived. It was held July 7 to 19 at Syracuse University.

It was to serve as a gathering place for workers interested in nutrition where they could study their common problems with a group of specialists to guide their thinking. The group was deliberately kept small and discussions informal so that better participation and exchange of ideas by everyone present could be achieved.

A reading list containing both basic background material and some of the latest developments in the fields was provided for students, and through the cooperation of all libraries on the campus, a collection of books and articles was made available for ready reference. Other references and material was also furnished by the specialists. Graduate credit could be earned by students if desired.

The first day of the Institute was planned to give an insight into local community organization, using Syracuse as an example. After an opening coffee hour, representatives of both public and private agencies and lay organizations interested in community health and welfare briefly described their organizations, their relation to other agencies, and their nutrition programs.

The next morning representatives of federal and state agencies discussed their organizations and programs, with special reference to the help which could be expected from them by the local community and how that help could be obtained. In the afternoon, the group visited agencies where programs were in operation.

The third day was devoted to a study of the community itself and its needs. Two of the University's sociology professors served as specialists and such topics were discussed as: age groups, background, interests of the people, key people, and population groups. Special attention was given to a discussion of surveys—how they should be conducted, what could be expected from them, and what they could measure. The Nutrition Committee survey concerning nutrition activities of various agencies was used as an example. The director of the state Division of Maternal and Child Hygiene gave an appraisal of nutritional status of population groups, with special reference to the degree to which signs of nutritional deficiences now in use can be depended upon in evaluating nutritional status.

The next day was spent in studying the nutritional needs actually found in the community by the Nutrition Committee's survey. Two doctors and three lay leaders in adult education and child care interpreted needs. In turn, they learned of professional resources in the community.

Friday of the first week was devoted to the consideration of one of the knottiest problems—public indifference. How can people be made to see their needs and how can action be stimulated? Some of the methods of arousing a community to action were presented at this session.

During the second week a study of methods and tools for nutrition education was made, with discussions dealing both with group teaching and individual counseling. Mary Pfaffman, formerly educational director of the Boston Dispensary, demonstrated methods of teaching nutrition to groups of children and adults. She was followed by Dr. Evelyn Herrington of the University's Department of Education, who showed some of the new methods being tried in teaching nutrition from recordings.

Regardless of the method of teaching, an understanding of psychology is imperative. To cover this field, Dr. Charlotte G. Babcock, a practicing psychiatrist, and Dr. C. F. Hager of the University's faculty serves as leaders. Because of the importance of this field, it is planned to put more emphasis on it at the next Institute.

The Institute closed with a presentation and study of the methods and materials useful in teaching and interesting the public in nutrition. The technical guides for this subject were Sandra George, director of the University's film library who represented the theoretical and academic approach; Anna Touse, an authority on community education material; and Dr. Marietta Eichelberger, who spoke from her experience in business. Miss Pfaffman showed illustrative material from the Boston Dispensary.

The mere listing of the program cannot convey the essence of this fortnight, for the students brought much which could never appear on the program. Each was experienced in her own field and hence able to make a unique contribution. All of this resulted in an unusually well rounded viewpoint. Another development which likewise is not indicated in the program was the benefit which was derived by the community. Participation in the Institute brought professional and lay workers together and gave them an opportunity to discuss their problems as they had never done before.—*Anne Bourquin, professor of foods and nutrition, Syracuse University, Syracuse, New York.*

A Study of Obese Patients in a Nutrition Clinic[1]

MARTHA TRULSON,[2] ETHEL D. WALSH, and ELIZABETH K. CASO

Department of Nutrition, Harvard School of Public Health and the *Medical Clinics, Peter Bent Brigham Hospital, Boston*

THE purpose of this paper is to evaluate some of the statistics on body weight of 847 obese patients and to make recommendations for improving the dietetic interview for this type of patient. Factors which influence the results are discussed and suggestions are made for increasing the effectiveness of the weight reduction regime. Emphasis is placed on the importance of the interview in obtaining information not only concerning the patient's food habits, but also information which will help the nutritionist to understand the patient's attitude toward the diet. The assistance which the psychiatric social worker can give to both the nutritionist and patient in creating a better understanding of psycho-social problems is discussed. No attempt is made to point out the importance of weight control from the health standpoint. It is sufficient to say that overweight or obesity is a health problem which becomes increasingly important as the life span is extended.

COLLECTION OF CLINIC STATISTICS

This study was done in the Nutrition Clinic of Peter Bent Brigham Hospital. All patients in this study may be classified as "simple" obesity; that is, they have no known glandular involvements which contribute to their condition. Patients come to the Nutrition Clinic through referral from the other clinics in the Out-Patient Department, and the nutritionist makes secondary appointments directly with the patient. If the patient is to return to see his physician, the return appointment at the Nutrition Clinic is made to coincide with that visit. In the beginning of the dietary program, the appointments may be at weekly or semi-monthly intervals. As the patient gains more confidence and is able to manage his own diet, his visits are extended to periods of a month or six weeks. If the patient misses an appointment, he is sent a card reminding him that the nutritionist wishes to see him and is given another appointment. Three such cards are sent, and if he fails to respond, he is dropped from the active patient list. In addition to the regular patient's record kept by the hospital, a card file system is maintained in the Nutrition Clinic. The patient's name, out-patient number, age, sex, date of appointment, clinic attendance, weight at each visit, height, and ideal weight are recorded for this card file.

When the patient has lost an amount of weight which is termed satisfactory by the physician, he is given instruction concerning a "maintenance diet," discharged from the Nutrition Clinic, and encouraged to return if he begins to gain weight. "Ideal weight" is used as the standard for satisfactory weight loss, and the tables of ideal weights as published by the Metropolitan Life Insurance Company (1, 2) were used in these studies. The term "ideal weight" was defined as average weight for height at age thirty by the Life Extension Institute and is reported by Fisk (3). The tables of ideal weights now used by the Metropolitan Life Insurance Company are adjusted for body build (small, medium, large) and are essentially tables for average weight for height at age twenty-five.

Eight hundred and forty-seven obese patients were admitted to the Nutrition Clinic between January, 1944, and July, 1946. The distribution by sex was 757 females to 90 males; the ratio of females to males was thus 8.6 to 1. Each patient made an average of 3.2 visits. The ages of the patients ranged from 12 to 75 years, and as can be seen in Table 1 approximately 50 per cent of the admissions were between 41 and 60 years of age. Of the 847 patients admitted to the clinic, 585 (69.1 per cent) returned to the clinic for further treatment. Two hundred sixty-two (30.9 per cent) failed to return. The percentage not returning was greatest in the two younger age groups. The highest percentage of patients returning to the clinic was found in the age groups over 41 years.

The following criteria were used for a standard of success:

(1) Weight loss of 10 lb. or more for those on admission weighing 150 lb. or less.

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[2] Now chief nutritionist, Veterans Administration Regional Office, Branch No. 7, Chicago, Illinois.

(2) Weight loss of 15 lb. or more for those who on admission weighed 151 to 175 lb.
(3) Weight loss of 20 lb. or more for those who on admission weighed 176 to 200 lb.
(4) Weight loss of 25 lb. or more for those who on admission weighed 201 to 225 lb.
(5) Weight loss of 30 lb. or more for those who on admission weighed 226 to 250 lb.
(6) Weight loss of 35 lb. or more for those who on admission weighed 251 lb. or more.

Treatment was considered a failure for those patients who failed to show a weight loss of more than 5 lb. in not less than four months of therapy.

Table 2 is a comparison of successfully treated, unsuccessfully treated, and unclassified patients who returned to the clinic. Of the patients who made return visits to the clinic, 130 (22.5 per cent) may be considered successfully treated and 189 (32.6 per cent) unsuccessfully treated. This method of evaluating the clinic results left 260 patients (44.9 per cent) who could not be placed in either of the two groups and are therefore called "unclassified" patients. While they had lost more than 5 lb., their loss had not been sufficient to be termed successful according to the standards set up. Since these cases are still being seen in the clinic, a certain proportion of them may eventually be successful in losing more weight.

TABLE 1

Classification of obese patients according to age, number of return visits, and sex

AGE GROUP	ADMISSIONS			RETURN VISITS					
	Total	Males	Females	Total		Males		Females	
years					%		%		%
0–15	32	12	20	19	59.4	8	66.7	11	55.0
16–20	23	2	21	13	56.5	2	100.0	11	52.4
21–30	58	5	53	37	63.8	2	40.0	35	66.0
31–40	122	6	116	78	63.9	2	33.3	76	65.5
41–50	236	15	221	167	70.8	7	46.7	160	72.4
51–60	188	23	165	131	69.7	12	52.2	119	72.1
61–70	92	20	72	71	83.7	19	95.0	52	72.2
Over 70	12	2	10	9	75.0	2	100.0	7	70.0
Unknown	84	5	79	54	64.3	3	60.0	51	64.6
Total	847	90	757	579	68.3	57	63.3	522	69.0

Discussion

The ratio of females to males, 8.6 to 1, cannot be considered the ratio of female to male cases of obesity in a sample population. The Nutrition Clinic is not open at times convenient to the working population. If the clinic were open in the evening, there might be an alteration in the sex ratio and in the age groups making return visits. Saturday morning hours might improve the attendance of the school age group.

In Table 1 it can be seen that for the total group, the two youngest age groups, 0 to 15 years and 16 to 20 years, had the smallest percentage of patients returning to the clinic. When the data were tabulated according to sex, it was found that the males of these two age groups showed the highest percentage of returning patients. Since the number of patients in both of these younger age groups was so small, it would be difficult to prove that the percentage of boys making return visits was due to chance or to some influencing factor, such as fear of retarded sexual development in the obese boy.

The highest percentage of returns occurred in the patients forty-one years of age or older. The home responsibilities of this group may be less confining. They often have other physical complications that bring them back to the clinic. They may be more stable and have a greater urge to lose weight, and they may be more receptive to dietary instruction.

These data help to emphasize the importance of periodically evaluating the techniques used by a clinic nutritionist in patient instruction. Complete records should be kept in the clinic for this purpose.

TABLE 2

Comparison of successfully treated, unsuccessfully treated, and unclassified obese patients returning to the clinic

AGE GROUP	NUMBER OF PATIENTS	PATIENTS SUCCESSFULLY TREATED		PATIENTS UNSUCCESSFULLY TREATED		UNCLASSIFIED PATIENTS*	
years			%		%		%
0–15	19	4	21.1	7	36.8	8	42.1
16–20	13	2	15.4	3	23.1	8	61.5
21–30	37	11	29.7	12	32.4	14	37.9
31–40	78	15	19.2	29	37.1	34	43.7
41–50	167	40	24.0	49	29.3	78	46.7
51–60	131	33	25.2	41	31.3	57	43.5
61–70	71	14	19.7	21	29.6	36	50.7
Over 70	9	1	11.1	2	22.2	6	66.7
Unknown	54	10	18.5	25	46.3	19	35.2
Total	579	130	22.5	189	32.6	260	44.9

* Patients who lost over 5 lb. but who had not lost enough to be termed successful according to the standards set up.

Too frequently this is not done and the same educational methods are used year after year. The nutritionist should determine what is happening to the patients. Are they returning to the clinic for further instruction and aid? Is the clinic meeting the needs of the public which it serves? Is there satisfactory adherence to the diet? What new approaches and methods should be tried on the basis of these findings?

RECOMMENDATIONS FOR IMPROVING THE DIETETIC INTERVIEW

The obese patient who enters the Nutrition Clinic may come with a preconceived belief that the nutritionist will take away only the foods which he enjoys. It is little wonder that the nutritionist is confronted by patients who offer varying degrees of resistance to her advice. No one wishes to be deprived of things considered pleasant. Perhaps when these same patients were children their desserts, or sweets, and even meals were taken from them when they misbehaved. The nutritionist, no matter whether she or the patient appreciates it, is placed in the role of the stern parent. Although the patient may understand that this is being done for his own good, nevertheless it is an unpleasant experience for the patient to accept the realization that for a considerable time he will not be able to derive the satisfaction from eating foods which he has hitherto enjoyed. The results which the nutritionist obtains are dependent on her ability to use foods in the diet which are high in satiety value, such as protein-rich foods, and foods high in bulk, such as vegetables and fruits. And, in addition, the results will be determined by the patient's ability to lessen his need for satisfaction from food. The nutritionist must expect that her results will not be uniform.

What are the factors which stimulate the patient to lose weight? These motivating factors should be studied and recognition given to them by the nutritionist. Motivations which cause a person to adhere to a reducing regime may be an enhancement of the feeling of personal worth, desire for admiration, love, and affection of others, a wish to maintain health, and the preservation or recovery of the ability to provide for one's livelihood.

The attitude of the physician is important in the motivation of the patient. If the physician stresses and explains the significance of weight reduction to health, it will seem more important to the patient. The checking of the patient's progress by the physician will encourage the patient. It is more satisfactory for the patient to be seen by the same physician so that this personal relationship may be established.

The attitude and the impression which the nutritionist creates at the first interview are important. The patient must understand that the nutritionist regards obesity as a disease and not a vice, that she offers him aid and assistance, not punishment. It requires tact and understanding on the part of the nutritionist to cope with the complexities which may be present in the obese patient.

It is important to consider what factors contribute to increased food intake. We have noticed in our cases that overeating acts as an appeasement to anxiety and is frequently associated with feelings of insecurity. This is especially apt to be true for people who have been deprived of a satisfying amount of affection in their very early years. Such people may be habitually inclined to eat in order to defend themselves against anxiety which, although it is frequently concealed, may be chronically present. Other people who have experienced such early deprivations may resort to overeating only when their immediate situation is one in which they feel a loss of affection and support. Overeating as well as undereating is commonly associated with depressed feelings.

Sometimes, consumption of food beyond physiological needs is associated with fantasies that are usually at the subconscious level. Although certain indications of them may be drawn out in a careful history taking, the fantasies themselves are only accessible to intensive psychotherapy. For instance, overeating may be associated unconsciously with pregnancy fantasies, or excessive weight gains with their disfiguring effects may be used as a protection against love and marriage.

Eating disturbances are particularly likely to take place during critical periods such as puberty, pregnancy, and the menopause. We also noticed disturbances following changes in the environment which the patient found difficult, such as the birth of a sibling, a bereavement, or a divorce. Overeating sometimes follows an operation or a convalescence from other illnesses, and it seems obvious that these events have a special emotional meaning for the patient which he deals with through increased food intake.

Decreased caloric expenditure may be due to decreased activity. The obesity frequently encountered in the middle aged patient is often the result of maintaining the eating patterns established during a period of greater activity in earlier years. The obesity seen in the cardiac, hypertensive, and arthritic patient is also augmented by the relative inactivity of the patient without adequate alteration of the eating habits.

What information can the nutritionist derive from the interview which will give a better understanding of the patient's emotional reaction to eating and lead to the acceptance of the diet and the nutritionist? Fifteen patients from the Nutrition Clinic were selected for study. With direction from the psychiatric social worker, the nutritionist attempted to understand the patient better and to find adequate explanations for the patient's failures and successes. All of the patients made three or more visits

to the clinic. Twelve failed to respond to diet instruction. Of these twelve, four were also receiving psychiatric aid. The three patients who lost weight successfully were selected at random. (Ten cases are reviewed briefly at the end of this paper.)

The nutritionist and psychiatric social worker found that many of the difficulties exhibited by the patients who were receiving psychotherapy were also encountered in the eight other cases that were failures. From studying these cases it was felt that it would be desirable if the nutritionist could conduct the interview so that certain information could be obtained which would aid her in determining whether emotional problems would interfere with the reducing program. When the nutritionist becomes aware of factors which are influencing the patient's food consumption, she will be able to anticipate the success or failure of the reducing regime and to decide when to seek help with the therapy.

In the dietetic interview the following information should be obtained:

Is the patient willing to accept dietary instruction? If the patient is in an unreceptive frame of mind, if he rejects the idea of diet control, there is little chance that he will follow the instruction. If this attitude can be attributed to fatigue from lengthy waiting in the clinic or to the fact that the patient is pressed for time, it would be better to make another appointment rather than attempt an interview.

What does the patient think about a diet? Does he believe that weight loss is important to him? Does he have any fears associated with a diet or weight loss? It is helpful to find out why the patient thinks the physician advises him to lose weight. If the patient is told simply that he is overweight, he may not be sufficiently motivated to follow a diet. However, if he is told the relationship of the excess weight to his present physical condition and what may result from overweight, he may be more willing to follow a reducing regime. A patient may accept his overweight condition and not wish to lose weight unless he can see that he will benefit from the program. He may have fears associated with weight loss, thinking that his health will be impaired. He may have heard of people who have suffered ill effects from "dieting."

Does the patient have the intelligence to follow the instructions? While a high intelligence quotient in no way insures adherence to the program, nevertheless if the patient is unable to understand the instruction, the program will not be successful. In any case, the instruction should be graded to the level of the patient's intelligence.

What factors in the family history are pertinent? Are the parents or siblings overweight? Is there any diabetes in the family?

What is the patient's relationship with his family? Will they encourage him in his reducing program? Does he feel rejected by the group or any person in his family environment? It is difficult to expect a housewife to follow a program which she feels involves a sacrifice on her part, if she is not encouraged by her husband and children. A child is not likely to give up the gratification which he received from food if he feels lonely or rejected. This information is difficult for the nutritionist to obtain and may not be derived until the patient has accepted the nutritionist.

Does the patient give the impression of maturity or immaturity? Does he appear to be secure? From this information the nutritionist may determine the best method of follow-up work. If the patient appears immature and dependent, the nutritionist will establish a closer relationship with the patient. She will have frequent appointments with him. If the patient seems secure and mature, often all that is needed is to teach him what foods should be included in his diet, methods of food preparation, and ways to plan the dietary pattern. The extent to which the patient relies on food for gratification should be understood. The nutritionist must offer the patient some supplement which will replace the need for excess food.

At what age did the obesity occur? Is it an obesity of long duration? From clinical experience, it is observed that obesity which occurs in childhood presents a more difficult problem than that which occurs at later life. The emotional significance attached to food by the obese child seems difficult to change. Obesity of long duration results in more firmly established food habits.

Has the onset of obesity been gradual or sudden? A sudden onset of obesity may demonstrate that a precipitating factor has changed the eating pattern of the patient. Did the obesity occur after any specific event which could be called a precipitating factor, such as surgery, especially a tonsillectomy; a pregnancy; the birth of a sibling; a loss or bereavement; or a radical change in occupation or environment? It has been found that events which cause emotional distress may cause for the patient an increased need to seek gratification from food.

Does the patient present a history of gastrointestinal upsets? Has he been subject to attacks of diarrhea, colitis, heartburn, or constipation? Has he taken medicine habitually or spasmodically for constipation, "acid stomach," or any other gastric condition? It was noted that the obese patient often gives indication of distress associated with food.

What are the patient's food habits? What is his meal pattern? At what time and under what conditions is his craving for food greatest? What particular food gives him the greatest satisfaction? How is the food prepared? It is apparent in the case of "simple" obesity that the food intake is in excess of the patient's needs regardless of the history

obtained from the patient. A patient who gives a grossly inaccurate diet history may attach a great deal of importance to food, but may feel a sense of guilt or shame in admitting overindulgence of food. The place of eating, method of food preparation, and the ability of the patient to obtain the food should be studied. The meal pattern and the daily distribution of food are important. The obese patient often eats lightly during the day and excessively at night.

SUMMARY AND CONCLUSIONS

(a) From the statistical data collected at the Nutrition Clinic it was found that 22.5 per cent of the cases had lost enough weight to be considered successes; 32.6 per cent had failed to show any response; and the remainder had lost weight in varying amounts, but the treatment could not be termed successful according to the arbitrary standards used.

(b) The clinic nutritionist should periodically evaluate her methods of patient instruction. Successes and failures should be analyzed.

(c) The following methods for increasing the efficiency and success of the cases of obesity in the clinic are suggested:
  (1) The clinic should try to adjust its hours to the population which it serves.
  (2) As far as practical, the patient should be treated without change of therapists.
  (3) The nutritionist should be familiar with the psychological and sociological factors affecting eating and "dieting."
  (4) The nutritionist should be able to call upon the psychiatric department for advice and guidance when emotional factors are influencing the progress of the patient. She should be able to determine the futility of further work with some patients.

(d) Suggestions are given as to the information to be derived from the interview with the obese patient which will aid the nutritionist in understanding the problems involved.

CASE SUMMARIES

Subject *1* was a married, middle-aged woman who was 40 lb. overweight. Her obese condition became noticeable when she was about thirty years old. During the past fifteen years she had been treated for obesity and the following conditions: fatigue, palpitation, cholecystitis, diarrhea, and arthritis. The gastrointestinal upsets occurred after emotional strain. Although the patient had received repeated dietary instruction, she had never been able to control her weight. The patient gave the impression of immaturity. The psychiatric social worker suggested that a close personal relationship be established with the patient. After two lengthy interviews, the patient began to lose weight. The patient said she had adhered to the diet pattern only because she wished to please the nutritionist.

Subject *2* was a sixty-year-old woman of Irish ancestry. She was approximately 40 to 50 lb. overweight. She had gradually become obese. In spite of having made seven visits to the Nutrition Clinic during a fifteen-month period, she had experienced no weight loss. This patient was a very sociable woman, and a great deal of her leisure time was spent in afternoon parties. It appeared that she attended the clinic mainly to make a social visit. It was felt that if the woman could receive group therapy there would be more motivation than had been established.

Subject *3* was a fifty-eight-year-old former mason. He was about 50 lb. overweight. He became obese after an accident which prevented him from following his trade. Although the patient realized that a loss of weight was recommended because of a cardiac condition, he had been unable to reduce. This patient attached a great deal of significance to weight. Loss of weight was symbolic of catastrophic occurrences. He believed that his daughter's epileptic attacks were the result of her reducing. An acquaintance, according to the patient, lost all her teeth as a result of weight reduction. Since it is known that seizures may be associated with the results of masturbation and the loss of teeth with the fear of castration, it would have been interesting to have found out what food meant to this patient. Unless these fears could be dispelled, it was felt that nothing could be accomplished by further dietary instruction.

Subject *4* was a fifty-year-old, unemployed, single woman. She was 70 to 80 lb. overweight. When the patient was thirty years old, she underwent an appendectomy and a cholecystectomy. Obesity occurred tne following year after a tonsillectomy. The patient came to the clinic complaining of leg pain, polyuria, chest pains, shortness of breath, and tiredness. She reported frequent bowel upsets with severe diarrhea. The patient and her unmarried sister had led a sheltered life. Her only employment outside of her home was in a candy factory. The patient gave the appearance of immaturity. The tonsillectomy seemed to be the factor that precipitated the obesity. It was felt that she should receive psychiatric aid as well as nutritional advice to find out what food meant to her.

Subject *5* was a fifty-six-year-old widow. She was 80 lb. overweight and had been obese for twenty years. For the past seven years she had attended the Nutrition Clinic without experiencing weight loss. At one time she had been under the care of a psychiatrist. Benzedrine sulphate had been used unsuccessfully. Because her husband had not wished children, the patient had taken a medicine which her husband had told her would insure menses. The taking of this medication had created a feeling of unhappiness and anxiety in the patient, and her family physician had predicted that serious illnesses would follow this practice. The patient felt that her obesity was the result of the medicine. Whether she considered her disfiguring obesity a punishment could not be determined. After several interviews, it did not seem that the nutritionist had enough to offer by way of diet to meet the needs of this woman which were being satisfied by food.

Subject *6* was a forty-two-year-old divorced male. He was 90 to 100 lb. overweight. When the patient was twelve years old, he underwent a tonsillectomy and became markedly obese a year later. Because of his appearance he was an object of ridicule and experienced an unhappy childhood. Several physicians had given him diet instruction without success. It was felt that the tonsillectomy had been the factor precipitating the obesity. Since any operation of removal, particularly in a child, may be symbolic of fear of castration and emotional trauma, it would be necessary to find out the emotional significance of food to this patient to solve the problem of the patient's excessive appetite.

Subject *7* was a thirty-six-year-old married woman who was 100 lb. overweight. She had been hospitalized because of colitis attributed to a neurogenic basis. The patient exhibited a very immature personality. She had reacted gastrointestinally to three situations which had produced

emotional stress: (a) overeating following pregnancy; (b) vomiting associated with the behavior of her fifteen-year-old daughter; (c) diarrhea because of a quarrel with her husband. Her regression to oral expression was apparent although she denied eating excessively, nor did she admit that she derived pleasure from eating. The psychiatrist recommended that psychotherapy be directed toward establishing a relationship with the patient so that she could develop some motivation, perhaps through identification with the worker. The nutritionist needed to establish a relationship which would become necessary and important to the patient.

Subject *8* was a single, nineteen-year-old stenographer who was 40 lb. overweight. This patient entered the hospital complaining of severe backache and hyperesthesia of the inner surface of the thighs. There was no evidence of organic disease, and she was diagnosed as being emotionally unstable. The patient's attachment to her father was pronounced. The impression she created was that of a person with an hysterical nature and which involved sexual fantasies. It was felt that her regression to the oral level was perhaps a subconscious effort to retreat from her sexual fears. Although the patient was obese, it did not seem that the obesity could be lessened until a satisfactory relationship was established with the psychiatrist and subsequently with the nutritionist. The dietary consultation was interrupted pending development of a satisfactory relationship with the psychiatrist.

Subject *9* was a fifteen-year-old school girl who was 85 lb. overweight. The patient suffered obesity, amenorrhea, and headache. The girl had several emotional episodes which caused her to resort to infantile patterns of eating to obtain satisfaction: (a) at the age of seven she felt rejected by her father after he separated from her mother; (b) two years later, at the time that her mother remarried, she felt rejected by her mother; (c) the emotional distress caused by the menarche also resulted in increased caloric consumption. She was given psychiatric treatment. The psychiatrist developed therapy along the following lines: (a) establishment of a relationship in which the psychiatrist was the "good mother" with whom the patient could partly identify herself; and (b) development of emotional insight. The nutritionist's association with the patient was that of a teacher or friend who recognized and appreciated the intelligence of the patient. The nutritionist taught the principles of good nutrition to the patient, and the patient could apply the knowledge to herself if she so desired. Under this regime, the patient began to lose weight. It was felt that she should be given a great deal of time and careful supervision until she had developed insight concerning her condition.

Subject *10* was a forty-six-year-old married woman. She was 30 lb. overweight. She came to the clinic complaining of shortness of breath. After a hysterectomy six years previously, she had gradually begun to gain weight. Although her husband and sons had never objected to her obesity, they encouraged her to remain on the diet. The patient did not find it too difficult to reduce her food intake, and lost 20 lb. in six months. The patient was a well adjusted woman of mature judgment and presented no severe emotional problems.

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Explosive Flour

Asked to develop an explosive which could be shipped to Chinese collaborators by the ton, Dr. George B. Kistiakowsky of Harvard University during the war produced an explosive which not only looked like flour, but could be baked into bread and eaten. It tasted and smelled like ordinary flour, as well. Moreover, it could be exploded in the flour, dough, or bread form with equal effect by anyone who knew the trick of detonation.

Named "Aunt Jemina," the explosive was shipped in bags labeled "flour" to neutral countries and transhipped to Japanese Army quartermaster depots, where much of it fell into the hands of saboteurs or guerillas who operated behind Japanese lines in China. Although enemy soldiers must have eaten many loaves of bread made from "Aunt Jemina," they never discovered its secret.—*New York Times, March 16, 1947.*

New Varieties of Bananas

As air transportation develops with Latin America, more varieties of bananas may soon be seen on the grocery store counters in this country. Up to the present time, most U. S. customers have known only the Gros Michel variety.

The April-May issue of *Agriculture in the Americas* stated that in Latin America, people may choose from among five to fifteen different kinds of bananas, both ripe and green. The claret banana is popular at Christmas time, while the apple banana is said to have a flavor reminiscent of a mellow apple. One of the most delicate and perishable varieties is the Lady Finger, and a good cooking banana is the Plaintain.—*Consumer's Guide, 13: 6 (July), 1947.*

State Consulting Service to Aid Small Hospitals with Dietary Problems[1]

HENRIETTA HERBOLSHEIMER, M.D.

Chief, Division of Maternal and Child Health, Illinois Department of Public Health, Springfield[2]

FOR THE past ten years the Illinois Department of Public Health in the Division of Maternal and Child Health has carried out significant statewide programs for improved public understanding of the use of foods. This nutrition program at first was a direct service from a staff in Springfield to local community groups and district health departments; but, under the changing circumstances of inauguration of school lunch programs, wartime emphasis on food conservation, and the growth of full-time local health units, significant alterations and adaptions followed in the method and content of our nutrition program. Through coordination with other agencies and groups which had nutrition services in operation, this program was expanded and clarified. Our program, which had its beginning as a direct service from the state level to local communities, has now begun to operate on an area basis with each nutritionist providing consultation, staff education, and community conferences in a region comprised of groups of local health units. This history of the development of the public health nutrition program is significant because the more recently developed and now centrally administered program of assistance to hospitals in dietary care might reasonably be expected in time to follow an analogous pattern of more localized service.

The present program for assistance to hospitals grew from the realizations that a great many hospitals were anxious for help in solving problems related to food service and that hospitals, as focal points in a community health program, have an important influence on public health education. If good dietary practices are carried on in the hospital and information concerning nutritional needs is available, both direct and indirect benefits will accrue to the community. Many hospitals, however, have been and still are without qualified dietitians and so have no one trained to establish such a service. Therein lies a need for some kind of a system.

Further opportunity for real assistance became evident when the State Health Department accepted the responsibility of constructively criticizing blueprints submitted by hospital architects for compliance with the requirements of the Maternity Hospital Licensing Law. The study by a qualified dietitian and an experienced sanitary engineer of plans for new buildings or reconstruction involving dietary departments provides the opportunity to guide architects in the design of a food service unit which will be both efficient and safe. Our experience thus far has been that the architects have welcomed the many practical suggestions which have been made as to location and size of the dietary unit and the type of installations to be provided for optimum working conditions.

In addition to the foregoing types of assistance, we feel that the State Health Department has a real responsibility in offering guidance on sanitary practices of food handling. For a long time, Illinois, like many other states, required routine physical examinations, including laboratory tests for syphilis and enteric pathogens of food handlers and all personnel who gave service to maternity patients. Recently, and after careful study, this requirement was rescinded because there is little to indicate that routine physical examinations as a measure in controlling the spread of disease are of sufficient value to justify the tremendous cost and trouble necessary to find each carrier. A physical examination carried out at infrequent intervals is not intended to give assurance that employees so examined would not become carriers of disease. Yet inherent in this type of procedure lies the possible inference that there is

[1] Presented at the Institute on Organization and Operation of the Hospital Dietary Department conducted by the Council on Professional Practice of the American Hospital Association, Ann Arbor, Michigan, June 23–27, 1947.

[2] Roland R. Cross, M.D., director. Wilma Robinson, consultant dietitian, Division of Maternal and Child Health, and George K. Hendrix, senior sanitary engineer, Division of Sanitary Engineering, Illinois Department of Public Health, assisted generously in the preparation of this material.

security in food handling and patient care if employees had a clean bill of health at the time of the last physical examination. We believe that greater returns in safe food handling will result from efforts expended in the improvement of sanitary facilities, educational programs for food handlers, personnel policies which encourage employees to report illnesses, and careful epidemiological study of outbreaks, including physical and laboratory examination of individuals on a selective basis as indicated by history or symptoms.

To develop a program of assistance to hospitals in dietary care a consultant dietitian to hospitals was employed by the Illinois Department of Public Health in January, 1945. Inasmuch as this dietitian was able to remain with the Department for only a short period, the service was not developed to a great extent at that time. Meanwhile the need for such a program was further emphasized through circumstances revealed in the statewide survey of hospital facilities. An analysis of selected factors in regard to dietary departments of general hospitals is shown from data compiled as a result of this survey (Table 1).

In January, 1946, when the position of consultant dietitian was again filled and a pattern of operation was more clearly defined, many hospitals began to look to the State Health Department for assistance in the solution of food service problems. In order to provide objective analyses as a basis for making sound recommendations, a detailed check list was developed to be used in evaluating every phase of the operation of the hospital dietary department. A brief experience with this check list indicated that one of the most immediate problems was the need for help in menu planning. Accordingly, the consultant dietitian prepared a pamphlet entitled "A Guide to Menu Planning for Institutions." This pamphlet has been sent out to all hospitals in Illinois and to some hospitals in other states upon request. The service was carried forward on a wave of enthusiasm swelled by the gratifying requests and responses from hospital administrators and dietitians; it grew through the vision of our present consultant dietitian, Wilma Robinson, and from the stimulus of the staff of the American Hospital Association. State agencies in Illinois are fortunately located with regard to the headquarters of both the American Hospital Association and the American Dietetic Association, and ample use has been made of this physical proximity. The active participation of these two national agencies has leavened our program in details to be discussed later in this paper.

Experience has shown that the consultant dietitian's services, which were originally planned to meet the needs of smaller hospitals without trained dietitians, have been used to a disproportionatly greater extent in larger hospitals which have dietitians. The majority of requests have been for an overall evaluation of the dietary department, although some individual, complex problems have been offered for solution. Some hospitals ask for help prior to remodeling, and others want not only assistance in structure and arrangement, but ask for guidance in the best use of new facilities in a remodeled department. Other requests have been for assistance in menu planning, special diets, the installation of new equipment, organization of a new kitchen, or suggestions for reorganization of a department.

All hospitals in the state (320) are eligible for this service. However, inasmuch as this program is a Division of Maternal and Child Health project and inasmuch as the regulations of the Maternity Hospital Licensing Law require that "satisfactory facilities shall be provided for the serving of well cooked, well planned, and adequate meals," priority consideration is given to hospitals with obstetrical service. Furthermore, the statute governing the licensure of nursing homes specifies that the diet must be "related to the needs of each resident and based on good nutritional practice and on recommendations which

TABLE 1

*Practices in dietary departments of general hospitals in Illinois in 1945**

GENERAL HOSPITALS		EMPLOYMENT OF QUALIFIED DIETITIAN	CENTRALIZED FOOD SERVICE	MECHANICAL DISHWASHER	DIETARY DEPARTMENT OPERATION CHECKED BY HEALTH DEPARTMENT	COST ACCOUNTING PRACTICED	DIETARY COSTS			
							Raw food		Served food	
Size	Number						Number reporting	Average cost	Number reporting	Average cost
beds		%	%	%	%	%		*per capita per meal*		*per capita per meal*
Under 25	42	0	94	0	73	3	0		1	$0.35
25–49	39	14	87	34	74	20	4	$0.27	6	$0.42
50–99	42	38	68	67	76	46	14	$0.19	12	$0.31
100–249	83	75	51	87	86	67	43	$0.22	28	$0.29
250–499	16	87	29	93	100	47	4	$0.17	4	$0.34
500 and over	6	100	67	100	100	100	3	$0.19	3	$0.35

* Source: Illinois Hospital Survey. Percentages are based on the number of hospitals reporting on each item.

may be made by the physician attending the resident." These legal requirements with regard to food service standards and the specific regulations on plumbing, food storage, and handling add confidence of statute to the validity of recommendations that may need to be made in sub-standard dietary departments (1).

The consultant dietitian visits the hospital by appointment. One day is allowed for each visit unless it is mutually agreeable to all parties concerned that more time is necessary to study the problem and to make recommendations. The dietitian's first contact with the hospital is through the administrator from whom she learns the nature of the problem or problems. Then she is introduced to the dietitian or food service supervisor. Together they review the basic organization of the department and specific work schedules. The consultant then observes methods of food storage, food preparation, and available equipment. As it may then be time for the noon meal to be served, the consultant observes the food service, and since she usually eats this meal at the hospital, she has an opportunity to judge the food served from the standpoint of palatability as well as for color, texture, and general appearance of the tray.

Following lunch the situation is discussed in detail with the food service supervisor, using the check list (referred to earlier) as a guide to obtain information in regard to food purchasing, menu planning, food preparation, food service, food disposal, records, sanitation, employee management, equipment, special diets, nourishments, infant formulas, and teaching. On the basis of accumulated data, observations, and impressions, a conference is held with the administrator alone or the administrator together with his dietitian. During this conference the good features of the service are emphasized and recommendations for improvements are made. A copy of the written report made for the State Health Department records is later offered to the administrator, and arrangements are completed for any necessary return visits.

Many of the difficulties encountered in these hospitals are the result of inadequate space allotment for the dietary department and poor physical layout. Personnel problems often start in circumstances where employees are working too closely together and are sharing equipment. One small hospital has a problem in the assignment of duties to employees because the main kitchen is operated as a separate unit from the diet kitchen and serving unit and they are on different floors of the hospital. More efficient work schedules could be planned and fewer employees would be needed if the department could be operated as one unit. The serving of cold and unpalatable food is frequently due to inadequate facilities for transportation of trays from the serving unit to the patient. The consultant finds few small hospitals in which cost control methods are used or even considered practical. Menus are seldom checked for nutritional adequacy and food preparation is a definite problem. Too often vegetables are overcooked, salads wilted, and food prepared hours before serving time. The consultant finds many instances in which the food service is the responsibility of the administrator, the director of nursing, or other hospital personnel with multiple responsibilities and duties they consider more important. She finds food service supervisors and dietitians who need stimulation. They have lost interest in making improvements because they do not have sufficient contacts with others who face similar problems and are overwhelmed by their daily tribulations. The consultant needs not only ingenuity but tact and understanding.

This program also includes the services of a sanitary engineer. George K. Hendrix, who is a senior sanitary engineer of the Division of Sanitary Engineering of our State Health Department and who has had an enviable experience in hospital sanitary engineering not only in the State Health Department but also in the United States Army, is available to hospitals for consultation on sanitary facilities and practices. Since sanitation is an important factor in the food service department, it is of definite value to have the engineer work closely with the consultant dietitian, particularly when new construction or remodeling is under consideration. In checking blueprints, suggestions are made for improving the plans from a practical standpoint, and the architect is advised of the reason for such suggestions. That this procedure has been helpful is borne out by letters from architects who have had an opportunity to use this service. Letters contain comments such as: "We would like to congratulate you on the splendid service you are giving architects in aiding them to design modern hospitals," and "The dietitian and sanitary engineer always had something to contribute which was of assistance."

The sanitary engineer confers with the administrator of the hospital regarding improved techniques and facilities in dishwashing, food storage, and food handling as well as garbage disposal and rodent and insect control. In addition, the engineer is competent to criticize constructively refrigeration methods, milk supply, and waste disposal techniques. The need for this service is emphasized by the unsanitary practices observed in many hospital visits. Refrigerators may be overcrowded, resulting in poor circulation of air and hence inadequate refrigeration. Foods are often found stored in refrigerators in uncovered containers so that something from the shelf above may drop into the food below. The temperature of refrigerators may not be controlled, and floor drains may permit sewage to back up in the refrigerator, thus contaminating crated foods, such as lettuce, which are commonly stored on the floor. The

engineer finds many instances of poor dishwashing techniques, such as rinse water far below the recommended temperature of 170°F. and the drying of dishes with a dirty towel. He finds inadequate facilities for hand washing and advocates the use of reminder posters in washrooms. He stresses modern methods of insect and rodent control and the fact that it is possible and necessary to eliminate them. The engineer has found hospitals serving raw milk. He finds bulk milk stored in uncovered cans.

In view of these and other instances of unsanitary conditions, there are many obvious possibilities for the further development of this phase of the service. We have not as yet had time to explore all of the ramifications of sanitation in food handling in our institutions, but we plan among other things to encourage hospital laboratories to do swab analyses of washed dishes and utensils.

The latest development in connection with our hospital assistance program is the series of Conferences on Hospital Food Service held recently in Illinois. Since there is no precedent for this type of in-service training of voluntary and other hospital employees, these meetings were highly experimental in nature. Their purpose was to bring to the administrators, dietitians, food service supervisors, and other hospital personnel interested in food service, the latest information on hospital dietary management and to give those in attendance an opportunity to talk about their problems. The objectives were to promote, foster, and encourage interest in better food service by furnishing information on all phases of hospital food service, and, for the agencies sponsoring the Institutes, to obtain a more comprehensive knowledge of the major difficulties encountered in the smaller hospitals so that future programs may be planned in response to needs. This series of nine one-day conferences were co-sponsored by the American Hospital Association, Illinois Hospital Association, Illinois Dietetic Association, and the Division of Maternal and Child Health of the State Department of Public Health.

The state was divided on the basis of hospital locations into nine districts with one central meeting place in each district. Seven of the meetings were held in hospitals, one at a university, and the Chicago meeting at the American College of Surgeons. The topics covered were menu planning, food purchasing, food costs, employee training, sanitation, food service, and special diets. The four speakers sponsored by the American Hospital Association and the State Department of Public Health furnished the basic program in all of the meetings, but local dietitians also were scheduled and participated in the programs. The Veterans Administration and the Illinois Dietetic Association furnished a speaker on employee training for each session and the Illinois Hospital Association sent a dietitian to talk on food service.

From all indications I believe that these conferences did stimulate the interest of the hospital employees who attended. The sponsoring agencies, to be sure, attained their objectives because many and varied problems were discussed freely in the conferences. The largest attendance at any meeting, with the exception of the Chicago conference, was thirty, and all of the conferences were small enough to be conducive to conversation and to take on the patina of a workshop. The short distance from any hospital to one of the conference centers seemed to be another important factor in the success of these meetings because frequent comments were made on the convenience of having the Institute brought to the local area.

The Chicago meeting, which was planned under the guidance of the Chicago Hospital Council, offered a program more highly technical than those given at the smaller downstate meetings. The general session, held in the morning, attracted 127; the afternoon sessions were divided into panels in order to facilitate group discussions. Through this type of arrangement an opportunity was provided for conversation and expressions of opinion on much the same basis that resulted automatically through the type of conference held in the less populous areas of the state.

An analysis of the attendance shows that the majority of those present were dietitians or food service supervisors. There was, however, a substantial representation of hospital administrators and other hospital personnel, such as nurses, cooks, and housekeepers, as well as public health nurses.

It would seem, from this experience, that local one-day conferences with a program of practical subject matter adapted to the needs of the community are of definite value. We found that many dietitians cannot be spared to attend distant state or national meetings, but are able to be away from their work long enough to participate in local institutes. We also found that the bringing together of local people engaged in the same profession promoted an exchange of ideas, experience, and fellowship that promises sustained interest and further cooperation. The meetings provided the sponsoring agencies with deeper understanding of the needs and individual problems of hospitals in the state. The fact that there were many requests for more meetings of this type would seem to be some objective evidence of their success.

The plans for the future of the hospital consultant dietitian's service remain flexible in order to facilitate changes in line with the apparent need of the hospitals in Illinois. We wish to offer as much service to as many hospitals as possible in order that the performance of dietary departments in our hospitals will reach the highest attainable level. We believe that with the changing concepts of the relative position of the hospital in the community, there is an opportunity for the hospital dietitian, as a highly trained professional person, to make more definite and far reaching contributions to the public health of the

community. She can achieve this, first, by developing the hospital food service so that it is an example for all others engaged in communal feeding in the vicinity, and second, by taking an active part insofar as possible in community affairs which relate to foods and nutrition. In many communities this is doubtless a long way off. There is not uniform recognition of the relative importance of the dietary department; many hospitals lack facilities adequate for efficient and sanitary food service; and employees are not particularly trained for the job to which they are assigned.

In order that the dietitians and the hospital which they serve may look with clarity and confidence to wider horizons, there must be good basic organization of the primary responsibility of feeding the in-bed patients. With such organization the progressive dietitian can make her department an outstanding factor in a good public relations program, for as you all know, "the way to a man's heart—." If her responsibilities are not too large in the individual institution where she is employed, the dietitian may be able to arrange to help with therapeutic diets for outpatients on either a community service or an educational basis, and she might give consultative service to a neighboring hospital which is too small to attract or afford a dietitian. She should have the opportunity to comprehend the significance of the portion of the hospital budget expended by the dietary department in view of the large share which is expended on this service (Table 2). This appreciable sum predicates food cost control if the resources of the hospital are to be expended wisely. The dietitian, by setting up a system of cost control as well as by training of employees in the importance of the elimination of waste, can be of valuable assistance in keeping operating costs at a minimum.

It would seem, then, that our efforts should be directed toward:

(a) Better practices in the organization and management of the dietary department.

(b) The education of food handlers in good sanitary practices.

(c) The construction of hospitals with well planned dietary departments which provide for an efficient flow of work as well as adequate equipment.

(d) The development of the place of the dietitian in the community by the use of hospital facilities in the promotion of a public health program.

Although our program for dietary assistance is comparatively new, we feel that its place in the total public health program is established and that the possibilities for its expansion are unlimited. If our plans for the extension of this service are realized, we will be able to offer to the hospitals in Illinois more than general assistance. As hospitals gain confidence in their potentialities as motivating forces in the community health patterns, as they are able to build and remodel their over-burdened plants, as they attain their full quota of personnel, and as they respond to the idea of coordination, so will the problems change. Our hopes and expectations are that the program of dietary assistance to hospitals will, like our public health nutrition programs of today, eventually become a responsibility of the local regions served. Such a goal is possible as a logical by-product of the long-range program for construction and coordination of hospital and public health facilities.

TABLE 2

Distribution of operating expenses by size of hospital in Illinois, 1945

EXPENSE ITEMS	SIZE OF HOSPITAL					AVERAGE
	Less than 50 beds	50–99 beds	100–249 beds	250–499 beds	Over 500 beds	
	%	%	%	%	%	%
Dietary	19.5	19.2	19.9	20.5	19.7	19.9
Administration	13.9	12.9	11.0	8.1	10.5	10.8
Laundry	4.3	4.4	4.0	3.9	3.4	3.9
Housekeeping	6.7	6.5	7.3	10.1	8.2	7.8
Heat, light, etc.	5.7	5.7	5.8	7.5	4.9	5.9
Maintenance and repairs	4.7	5.4	5.3	5.8	5.7	5.4
Motor service	0.4	0.1	0.1	0.1	0.1	0.1
Medical and surgical service	12.2	9.6	12.6	12.1	11.8	12.1
Nursing service and education	21.4	22.1	18.5	12.8	19.4	18.2
Medical records and library	0.3	0.5	1.0	0.6	0.7	0.8
Social service	0.1	0.1	0.4	0.1	1.1	0.4
X-ray	3.0	4.0	4.5	5.0	3.3	4.3
Laboratories	1.5	2.5	3.5	4.6	3.8	3.6
Pharmacy	4.1	5.4	4.7	7.0	3.9	5.0
Physical therapy	0.0	0.2	0.5	0.3	0.5	0.4
Other	2.1	1.2	0.9	1.3	3.1	1.4
Total per diem cost....	$6.96	$7.51	$8.07	$7.68	$9.47	
Number of hospitals...	51	40	81	12	5	

REFERENCE

(1) SPECK, G. M.: The consulting dietitian supplies a demand for better food service. Modern Hospital 67: 100 (December), 1946.

THIAMINE IN TURKEY MEAT

Tests at the Kentucky Experiment Station show that turkey meat provides not only protein and fat, but thiamine, with the portion of the meat just under the skin richer in this vitamin than the portions extending to the bone. During roasting, it has been shown that the dark meat loses slightly more than half of the original thiamine content, while the white meat loses more than a third. In tests with left-over, reheated turkey meat no marked loss of thiamine was observed.

The Determination of Fat and Its Relation to the Calculated Caloric Value of Diets[1]

OLAF MICKELSEN, ERMA v. O. MILLER, ANCEL KEYS, and H. H. MITCHELL[2]

Laboratory of Physiological Hygiene, University of Minnesota, Minneapolis, and *Division of Nutrition, University of Illinois, Urbana*

IN THE preparation of diets for experiments with normal young men, the authors have been impressed by the marked discrepancies frequently observed between the caloric values as calculated from tables of food composition and those obtained by the application of conversion factors to the values for carbohydrate, protein, and fat determined by proximate analysis. Results of analyses of different batches of the same diet showed that the apparent fat content was subject to the greatest day-to-day variation. This led to an investigation of the factors which might have some influence on the fat content of the diet. It was thought that the method of analysis for fat would serve as a convenient point of attack in such an investigation.

All foods used in this work were prepared and carefully weighed in a diet kitchen according to prescribed formulas. Three different low-fat diets were used. These diets were used in rotation over a period of six months as part of a large experiment on semi-starvation. The composition of these diets is given in Table 1. This paper presents the results of a study of the analysis for fat in such material.

EXPERIMENTAL PROCEDURE

General preparation of samples. Samples of the moist diet, usually in the amount of 1 kg. or more, were prepared for analysis by grinding in a motor-driven meat grinder. Measured amounts of water were added where the consistency of the diet was such as to interfere with grinding. After all of the diet had been put through the grinder, the grinder was taken apart and all parts scraped clean, the scrapings being mixed into the ground material. If there was much adherent material, the sample was put through the grinder a second time. About 200 gm. of the ground mixture were then blended in a Waring Blendor. The resulting material was termed the "moist sample."

The material remaining after the portion for blending had been removed was spread in thin layers on pans and dried in an air oven at 50–60°C. When dry, this material was ground in a plate grinder until it passed through a 35-mesh sieve. This was referred to as the "dried sample."

Duplicate diet samples were prepared exactly like the above except that 0.5 per cent Duponol[3] was added to the moist material before it was put in the meat grinder. The Duponol was distributed throughout the sample by stirring with a large wooden spoon. Those samples containing this wetting agent will be designated either as "Duponol moist sample" or "Duponol dried sample." Correspondingly, those containing no Duponol will be called "plain moist sample" or "plain dried sample."

Analytical Methods. Ten- to 15-gm. portions of both the Duponol and plain moist samples were weighed out on discs of ether-extracted filter paper and dried in an air oven at 50°C. When dry, the filter papers were folded and placed in extraction thimbles. Two- to 3-gm. portions of the Duponol dried sample and the plain dried samples were weighed out directly into the extraction thimbles. All samples were extracted in a Soxhlet apparatus with anhydrous diethyl ether for 18 hr. in Laboratory 1 and with petroleum ether (Skellysolv F) for 48 hr. in Laboratory 2 and the fat analysis concluded in the usual manner.

Caloric contents were determined with the Parr oxygen bomb calorimeter. Saponification numbers

[1] Received for publication July 19, 1947.

[2] One of the authors gratefully acknowledges the contribution made by W. T. Haines, who was directly responsible for the analyses reported from Laboratory 2.

[3] The Duponol was kindly furnished by A. J. Feit of E. I. duPont de Nemours & Company, Chicago. Duponol C, which was used in this work, is largely lauryl sodium sulphate. It is made by sulphiting a technical grade of lauryl alcohol which contains other alcohols besides the C_{12}. It contains up to about 10 per cent of salts (Na_2SO_4).

TABLE 1

Composition of diets used for analysis

DIET 1		DIET 2		DIET 3	
Food	Quantity	Food	Quantity	Food	Quantity
Farina	230 gm.	Oatmeal	190 gm.	Pancakes	110 gm.
Sugar	12 gm.	Sugar	10 gm.	Sirup	55 cc.
Milk (3.5% fat)	90 cc.	Milk	100 cc.	Corn bread	120 gm.
Jello	115 gm.	Fried potatoes	200 gm.	Cheese sauce	52 gm.
Fish chowder	230 gm.	Rutabagas	40 gm.	Steamed turnips	100 gm.
Steamed potatoes	170 gm.	Lettuce	80 gm.	Carrot sticks	25 gm.
Peas and carrots	64 gm.	Dressing (sugar and		Whipped potatoes	220 gm.
Cabbage (raw)	100 gm.	vinegar)	20 cc.	Gravy	52 cc.
Dressing (sugar and		Macaroni	255 gm.	Green beans	55 gm.
vinegar)	20 cc.	Steamed potatoes	100 gm.	Apple crisp	80 gm.
Spaghetti	230 gm.	Dill pickle	20 gm.	Milk	40 cc.
Whipped potatoes	115 gm.	Chocolate pudding	168 gm.		

were determined in the ether extracts by the method of the Association of Official Agricultural Chemists (1). The ether extracts were analyzed for phosphorus by a modification of the Martland and Robinson procedure (2). Nitrogen was measured by the Kjeldahl method (1) as well as the modification proposed by Chibnall, Rees, and Williams (3)[4]. Moisture was estimated by drying to constant weight in a vacuum oven at 55°C. under a pressure of 15 mm. of mercury. Ash was determined by incineration at a temperature of 500° to 525°C. Most of these analyses were made in two different laboratories.

RESULTS

In all three diets, the presence of the Duponol produced a very considerable increase in the weight of material extracted by ether (Table 2). This is especially true of the analyses that were started directly on the moist samples, for which the Duponol quadrupled the weight of the ether extract in Diet 3; in Diet 2, the increase was not quite three times; and in Diet 1, it was 1.7 times. When the analyses were made on the dried samples, the differences between the plain and the Duponol samples were considerably less, but in every case the Duponol value was higher than the plain. There was very good agreement between the two different laboratories for the fat contents of the dried samples as determined by the diethyl ether and petroleum ether extraction methods.

A number of experiments were made to determine whether any of the added Duponol was removed by the ether. These included the extraction of Duponol in a Soxhlet apparatus with diethyl ether, alone and after the Duponol was mixed with such materials as ether-extracted casein. No more than 1 per cent of the Duponol was removed after 18 hr. of such extrac-

[4] In Laboratory 2, the samples were digested for 4 hr. after clearing, with mercury as a catalyst. No advantage was noted in continuing the digestion further.

TABLE 2

*The fat content of plain and Duponol samples of mixed diets**

DIET	FAT CONTENT OF MOIST SAMPLE	FAT CONTENT OF DRIED SAMPLE	
		Laboratory 1	Laboratory 2
	%	%	%
Diet 1			
Plain	6.51	9.38	9.20
Duponol	10.90	10.92	10.94
Diet 2			
Plain	3.49	11.84	11.87
Duponol	10.50	12.54	12.44
Diet 3			
Plain	2.23	7.09	7.12
Duponol	9.01	9.48	9.45

* On moisture-free basis.

TABLE 3

Comparison of ether extracts of mixed diets

DIET	PHOSPHORUS*	SAPONIFICATION NUMBER**	CALORIES†
Diet 1			
Plain	391	218	9.07
Duponol	399	223	9.10
Diet 2			
Plain	157††	223	9.24
Duponol	78	219	9.12
Diet 3			
Plain	37	215	9.19
Duponol	38	215	9.28

* Micrograms per gram of ether extract.

** Milligrams of KOH required to neutralize the acids from 1 gm. of ether extract.

† Kilogram calories per gram of ether extract as determined by combustion in the Parr calorimeter.

†† Repeated analyses on this sample gave variable results; this figure is the average of six analyses.

tion. This in no way could explain the differences between the plain and the Duponol diet samples.

It was also necessary to determine whether the extra material extracted in the presence of Duponol was actually fat or some other ether-soluble material. The ether extracts from the Duponol and the plain series were analyzed for phosphorus, the saponification number determined, and the caloric content measured by means of bomb calorimetry. The results of these analyses (Table 3) showed no difference in the composition of the fat from the plain diets when compared with that from the corresponding Duponol sample with the exception of the phosphorus content of Diet 2. There was a considerable difference between the phosphorus values for these two samples, and repeated analyses of the fat extract from the plain sample gave quite variable results, the figure listed being the average of at least six analyses. It is concluded, however, that the presence of the Duponol resulted only in a greater extraction of fat and did not selectively favor the extraction of compounds which, in the absence of this agent, were not soluble in ether.

Repeated analysis of the same moist diet for fat showed a much greater variation for the plain than for the Duponol samples (Table 4). Part of this was due to the fact that the absolute amount of fat in the two samples differed by so much. The variations for similar, repeated analyses made on the dried samples were much smaller, both on an absolute and on a percentage basis. Furthermore, there was no significant difference between the variations observed in the plain and the Duponol samples. This indicates that the best method of obtaining an accurate reproducible value for the fat content of a mixed diet is to prepare the dried Duponol sample. If this cannot be done, then it is advisable to start the fat analysis of the moist Duponol sample as soon as it has been blended. When some moist samples are stored at very low temperature (−20°C.), there is a loss of moisture from the surface which is due to the "distillation" of water from the sample onto the colder cover of the container. This loss of water in turn will change the concentration of all constituents when expressed as a percentage of the original moist sample.

TABLE 4

*Day-to-day variations in the weight of the ether extracts of mixed diets**

SAMPLE	ETHER EXTRACT				MAXIMUM DEVIATION
	Analysis 1	Analysis 2	Analysis 3	Mean	
	% of diet	*% of diet*	*% of diet*	*% of diet*	*% of mean*
Moist samples					
Diet 1					
Plain	6.50	7.60	8.26	7.45	23.6
Duponol	10.89	11.20	10.63	10.91	5.2
Diet 2					
Plain	3.49	2.24	3.32	3.02	41.5
Duponol	10.48	9.60	8.84	9.64	17.2
Diet 3					
Plain	2.22	3.94	2.32	2.83	60.8
Duponol	9.01	9.00	10.82	9.61	18.9
Dry samples					
Diet 1					
Plain	9.38	9.44	9.54	9.44	1.7
Duponol	10.92	10.97	11.18	11.02	1.8
Diet 2					
Plain	11.84	11.70	11.62	11.72	1.9
Duponol	12.54	12.38	12.52	12.48	1.3
Diet 3					
Plain	7.08	7.35	7.08	7.17	3.8
Duponol	9.48	9.79	9.54	9.60	3.2

* All samples were stored at −20°C. in the intervals between analyses. The analyses were performed at intervals of a week to four months. All values are expressed on the dry weight basis.

DISCUSSION

At first it was thought that the action of Duponol in increasing the weight of the ether extract was due solely to the fact that it permitted more complete extraction of the sample by the ether. This may be a part of the explanation, but it appears likely that the more important action of the Duponol is in the preparation of a uniform and homogeneous sample. The difference in homogeneity of the two samples was apparent when the blended samples were visually compared. There were small lumps of material scattered throughout the plain sample whereas the Duponol sample was of smooth texture. The difference between the two samples was also evident in the dried samples. When the plain samples were ground, large amounts of fat collected on the blades and the screw of the grinder; this was always scraped off and mixed in with the rest of the sample. Even with this precaution, it appears possible from the difference in the results obtained from the plain and Duponol methods that some fat was lost from the plain samples during grinding. In the case of the Duponol sample, there was very little material adhering to the grinder and that which did adhere did not contain a high concentration of fat.

At first it was thought that the moist Duponol sample differed only from the corresponding plain sample in being more homogeneous. If this were the only action of Duponol, then the concentration of fat in the plain diet should differ considerably from sample to sample. Consequently, on the basis of the laws of chance, one would expect to find about half of the results of the fat analyses on the plain samples higher than the corresponding values obtained by the Duponol method. So far we have not found any results on the moist plain samples that were higher than the Duponol values. In a few cases, the results were the same; this was the case for mixed diets con-

taining ordinary amounts of fat (about 10 per cent on the wet weight basis).

Furthermore, if the above possibility were true, one would also expect the protein and ash values for the moist samples to vary inversely with the fat contents. When the moist diets were analyzed for these constituents, there was no difference between the plain and the Duponol samples as far as protein in Diets 2 and 3 were concerned (Table 5). There was about a 10 per cent difference in the protein content of Diet 1. The ash contents were very slightly higher in all of the Duponol samples. This may be explained by the small amount of ash present in the Duponol that was added to the diet. The corresponding analyses on the dried samples show (Table 5), in the case of Diet 2, good agreement between the plain and the Duponol samples. This was also true of the ash contents of Diet 1. The protein contents of Diets 1 and 3 were higher in the plain than in the Duponol samples, whereas the ash in Diet 3 was higher in the Duponol sample.

The Duponol has other advantages. During the sifting of the finely ground dried sample, much less material adhered to the screen in the case of the Duponol samples than in the corresponding plain samples. The Duponol samples could be easily removed from the pans on which they were dried whereas the plain samples tended to adhere firmly.

The action of Duponol in increasing the weight of the ether extract is not limited to the mixed diets used in the above work. When 0.5 per cent Duponol, on the wet weight basis, was added to a variety of different foods, a variable but consistently greater ether extract was obtained than when the sample was not so treated (Table 6). Weighed portions of each of these moist foods were dried on a filter paper and analyzed for fat as previously described. In the case of Harvard beets and the special high protein breads containing either an added purified soya protein[5] or a calcium caseinate[6], the fat content appeared much higher for the Duponol sample. Ordinary whole wheat bread as prepared by a commercial bakery also showed a considerable increase in the ether extract by the Duponol technique. Even those foods which contained fairly large amounts of fat, such as vanilla muffins, cheese sauce, and carrot salad, showed increases of considerable magnitude when Duponol was used in preparing the sample for analysis.

The influence of the Duponol in increasing the ether extract of our diets had a much smaller effect on the total caloric value calculated from the proximate analyses than we originally thought it would. This results partly from the fact that the fat in these diets was relatively low and also because the carbohydrate was calculated by difference after the ash, protein, fat, and moisture had been determined. Such a procedure minimizes any differences in calories attributable to inaccuracies in the analyses for fats and protein.

For all three diets, the caloric values as calculated from tables of food composition are higher than those based on the proximate analyses (Table 7). The differences from the calculated caloric values for the three plain samples were 17, 17, and 9.5 per cent, while those for the Duponol samples were 11, 13, and 3.4 per cent respectively. These differences may be of significance in metabolism studies involving the estimate of caloric intakes. Before a final answer can be obtained to the question of the best method of determining the caloric content of mixed diets, it will be necessary to obtain agreement on the conversion factors to be used for the different foodstuffs (4).

It may not be amiss to indicate the variation in the

TABLE 5

*Protein and ash contents of mixed diets**

DIET	MOIST SAMPLE		DRIED SAMPLE			
			Protein		Ash	
	Protein	Ash	Laboratory 1	Laboratory 2	Laboratory 1	Laboratory 2
	%	%	%	%	%	%
Diet 1						
Plain	11.85	7.82	11.84	12.04	7.82	7.82
Duponol	10.96	7.84	10.92	11.19	7.84	7.92
Diet 2						
Plain	11.15	5.19	11.20	11.46	5.20	5.19
Duponol	11.18	5.23	11.21	11.43	5.22	5.45
Diet 3						
Plain	7.86	4.56	7.94	7.76	4.56	4.59
Duponol	7.70	4.90	7.63	7.75	4.90	5.39

* Dry weight basis.

TABLE 6

Fat content of various foods

FOOD	FAT CONTENT*	
	Plain sample	Duponol Sample
	%	%
Beets, Harvard	3.79	7.59
Sweet potatoes, candied	6.81	7.79
Carrot salad	44.03	52.92
Vegetable loaf	3.78	4.20
Vegetable soup	3.77	4.94
Cheese sauce	28.53	30.83
Muffins, Essenamine	7.12	7.92
Muffins, vanilla	17.53	18.48
Bread, Casec	2.89	4.05
Bread, soy	1.68	3.46
Bread, whole wheat	3.95	5.43
Macaroni loaf	4.88	5.40

* On dry weight basis.

[5] Supplied through the courtesy of Dr. James Hayward of Archer-Daniels Midland Company, Minneapolis.

[6] Casec, manufactured by Mead Johnson and Company, Evansville, Indiana.

TABLE 7

*Comparison of caloric content of diets**

DIET	TABLE VALUES**	PROXIMATE VALUES†	PARR VALUES††	PROXIMATE VALUES‡
	calories	*calories*	*calories*	*calories*
Diet 1				
Plain	1375	1137	1245	1222
Duponol		1220	1296	1306
Diet 2				
Plain	1518	1250	1476	1339
Duponol		1317	1445	1409
Diet 3				
Plain	1362	1232	1375	1303
Duponol		1315	1379	1390

* All values for moist samples.

** Calculated from tables of food composition.

† Calculated from proximate analyses using caloric factors 4,4,9 for carbohydrates, proteins, and fats respectively.

†† Determined in the Parr oxygen bomb calorimeter.

‡ Calculated from the analytical results for carbohydrates, proteins, and fats multiplied by 4.1, 5.65, and 9.45 respectively.

protein values as determined in the two different laboratories. In both cases, the total nitrogen as determined by two modifications of the Kjeldahl procedure was converted into protein by means of the factor 6.25. Laboratory 1 used the Kjeldahl procedure suggested for cereals (1), whereas Laboratory 2 used a modification involving a 4-hr. period of acid digestion after clearing of the sample (3, 5). In five of the six cases (Table 5), the latter modification indicated a larger amount of nitrogen than did the method of the Association of Official Agricultural Chemists. This may be due to the fact that the digestion time in the modified procedure was continued for a much longer time than in the other method. According to the English workers (3), as well as Miller and Houghton (5), a longer digestion time than that usually employed is necessary for complete digestion of the proteins present in foods. On the other hand, the agreement of the ash and fat analyses done in the two laboratories was very good.

CONCLUSIONS

The addition of small amounts of a surface active agent (Duponol C) to mixed diet samples before they were prepared for analysis produced a much more homogeneous sample than was otherwise attainable. The apparent fat content of the Duponol-containing diets was higher than that of the diets prepared without this substance. This difference amounted to as much as 30 per cent in a dry food mixture or to as much as 300 per cent in a mixture analyzed in the moist state. The solubility of the Duponol in the diethyl ether was ruled out as a possible cause of the higher values. Probably the main factor involved in this phenomenon was the more intimate contact between fat and solvent brought about by the surface active agent.

The Duponol had a similar influence on the analysis for fat in a large number of individual food items.

The best way to prepare diets for analysis appeared to be to air-dry the Duponol-containing sample and to use the finely ground material for all proximate analyses.

The longer-than-usual digestion period in the Kjeldahl determination of nitrogen used in one of the reporting laboratories (4 hr. after the digest cleared) seemed to give higher protein values than the shorter period used in the other laboratory.

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Meat in the Diet of Infants

The incorporation of meat in the diet of infants was not common before the introduction of commercially prepared products. Meat juices were sometimes used, and beef was laboriously scraped by the mother. In the early thirties commercially prepared vegetable and meat mixtures of good quality were introduced. Recently products solely of meat have also been studied and accepted by the Council on Foods and Nutrition. Long term studies are needed, which would extend over two or three years so that the effects of meat in the infant diet could be measured objectively in terms of height, weight, and other variables. Our present knowledge of the role of meat in the infant's diet is largely empirical. The work of Leverton and Clark is one of the few objective studies undertaken in this field. An extension of the study of the role of meat in the infant's diet might well open a new chapter in infant procedures.—*From Current Comment, J. A. M. A. 135: 162 (September 20), 1947.*

Some Characteristics of Mare's Colostrum and Milk[1]

ARTHUR D. HOLMES and HARRY G. LINDQUIST[2]

Massachusetts State College and Agricultural Experiment Station, Amherst

WHILE a number of investigators have studied the composition of milk produced by mares of different ages and breeds, the literature consulted contained no information regarding the composition of mare's colostrum. The first few days of life are a very critical period for foals as well as for newly-born offspring of other mammals. The data that have been assembled concerning the composition of colostrum produced by cows, sheep, sows, and women indicate that it is especially adapted for desirable nutrition of the newborn. In fact, Lundquist and Phillips (1) found that calves deprived of their mothers' colostrum did not grow satisfactorily and showed a tendency to develop various diseases. Spielman *et al.* (2) observed that Holstein, Guernsey, and Jersey male calves deprived of colostrum and fed a skim milk, low-carotene ration shortly developed scours. They concluded that the large amount of vitamin A in colostrum plays an important role in the prevention of scours and infection. This is in accord with Famulener's (3) conclusion from studies with goats that colostrum is the chief agent in producing passive immunization of newly born kids. Birk (4) reported that newborn infants fed colostrum showed a positive nitrogen balance and a good retention of phosphorus, potassium, and magnesium as compared with a negative balance of these constituents when colostrum was eliminated from the infant's early diet. Lewis and Wells (5) concluded that there is no equivalent substitute for human colostrum for newborn infants, that colostrum supplies euglobulin during the short period immediately after birth when proteins may be best absorbed without disintegration by digestive proteolysis and that the colostrum furnishes protective antibodies to the newborn which add much to its capacity to resist infection in early life.

In view of these and other reports regarding the importance of colostrum for the nutrition of young mammals and the limited information concerning the composition of mare's colostrum, this study was undertaken to accumulate data regarding the composition of colostrum produced by normal mares.

EXPERIMENTAL PROCEDURE

The milk was produced by four mature mares. The three Percheron mares were assumed to be typical of the draft breeds and the Palomino mare was assumed to be representative of the saddle and driving horse breeds. Mare No. *1*, a Percheron, was nine years old, weighed 1700 lb., and had her fifth foal. Mare No. *2* was a four-year-old Percheron that weighed 1600 lb. and was in her first lactation. Mare No. *3* , also a Percheron, was eight years old, weighed 1900 lb., and had produced five foals. Mare No. *4*, a Palomino, was ten years old, weighed 1100 lb., and appeared to have produced one or more foals previously.

The mares were housed with their foals in large, light, airy box stalls and their daily ration consisted of 4 qt. of crushed oats, six ears of dry dent corn, and all the early-cut mixed hay they desired. None of the Percheron mares were worked either preceding or following parturition, but the Palomino mare was rented for riding throughout pregnancy and nearly up to the time of foaling.

Mare No. *1* foaled between 1:00 and 2:00 A. M., and the first sample of colostrum was obtained at 9:00 A. M. Mare No. *2* had her foal in the evening between 7:00 and 10:00, and the first sample was collected at 9:00 A. M. Mare No. *3* foaled at 9:00 P. M., and the first sample was drawn at midnight before the foal had sucked. However, the first colostrum from Mare No. *3* differed somewhat from that of the other two mares, perhaps due to her preparturient secretion of milk. (For some days before

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foaling her udder was extremely full and when she was led about the barn, four streams would squirt to the floor (mares' teats have two apertures instead of one normally present in cows' teats), and at times enough was secreted to produce a gummy coating on the hoofs of her rear feet.) The first sample was not obtained from the Palomino mare until the second day after foaling.

All the mares were bred at the first estrus which normally occurs at about nine days after parturition. Mare No. *3* was bred on the ninth day, Mare No. *1* on the tenth day, and Mares No. *2* and *4* on the eleventh day following parturition; thus two mares were bred early and two mares late in the estrual period. Two of the foals, those of Mare No. *2* and Mare No. *4*, had pronounced scours during their mothers' estrus, but the other foals remained normal.

The milk was collected daily in the early forenoon for the first twenty-one days of lactation from each of the Percheron mares, and from the Palomino mare for fifteen days after foaling. The samples were taken directly to the laboratory and assays were begun within an hour. Determinations were made of the hydrogen ion concentration, fat, total solids, and ascorbic acid content of the milk. The hydrogen ion concentration was determined with a Beckman *p*H meter, the fat by the Babcock (6) method (modified to the extent that only 15 cc. of acid were used), the total solids by the Mojonnier and Troy (7) procedure, and the reduced ascorbic acid by Sharp's (8) rapid method.

RESULTS AND DISCUSSION

Seventy-six samples of mare's colostrum and milk were assayed for acidity, fat, and total solids. The average values that were obtained for the first twenty-one days of the lactation period are reported as graphs in Figure 1. The values for the initial colostrum samples for the three Percheron mares were: Mare No. *1*, *p*H 6.48, fat 4.3 per cent, and total solids 17.1 per cent; Mare No. *2*, *p*H 6.45, fat 1.5 per cent, and total solids 13.4 per cent; and Mare No. *3*, *p*H 6.65, fat 0.9 per cent, and total solids 18.9 per cent. The *p*H and fat values for the sample from Mare No. *3* more nearly approached the subsequent values for her mature milk than was the case for the other two mares. Quite likely this situation was influenced by the abnormal secretion previous to the arrival of her foal.

The acidity of the colostrum at parturition and for the first four days was decidedly different from the subsequent samples. On the fourth day of lactation the pH values were: 6.49 for Mare No. *1* 6.44 for Mare No. *2*, and 6.68 for Mare No. *3*. On the fifth day, however, the values had risen to *p*H 6.75, 6.78, and 6.96, respectively. This rapid change in the acidity of colostrum during the fifth day of lactation is quite in accord with values reported by Engel and Schlag (9) for the change in acidity of cow's colostrum, i.e., 18.4 at parturition and 9.2, 96 hr. later (1° of acidity equals 1 cc. N 4 NaOH per 100 cc. of milk).

From the fifth to the twenty-first day of lactation inclusive, the average *p*H values varied from 6.73 to 6.94 with a mean of 6.84. This observation is in close agreement with the range of from 6.66 to 6.98, with an average *p*H of 6.81 reported by Holmes and co-workers (10) for mare's milk during late lactation. These values are higher than those reported for cow's milk by other investigators, i.e., *p*H 6.50 to 6.80 by Milroy (11); *p*H 6.50 to 6.60 by Baker and Breed (12); *p*H 6.4 to 6.6 by Lisk (13); and *p*H 6.54 by Duncombe (14). Van Slyke and Baker (15) assayed over 300 samples of fresh cow's milk and found *p*H values from 6.50 to 7.20, 80 per cent of them being under 6.76. They also reported that, as the *p*H increased, the total solids and fat decreased, i.e., at *p*H 6.53 the total solids were 12.81 per cent and the fat 4.50 per cent, but at *p*H 7.15 the total solids were 9.13 per cent and the fat 2.10 per cent. The hydrogen ion concentration was higher for mare's milk than has been reported for goat's milk. Goat's milk has been reported to vary from *p*H 6.33 to 6.52 by Trout (16); from *p*H 6.54 to 6.57 by Gamble *et al.* (17); from *p*H 6.4 to 6.7 by Schultz and Chandler (18); and from *p*H 6.13 to 6.62 by Holmes and co-workers (19). The values for mare's milk are similar to, though slightly lower than the value of 6.97 reported by Davidsohn (20) for human milk.

The average fat content of the colostrum reported here was 2.2, 2.7, 2.2, and 2.5 per cent for the first four days of lactation, respectively. On the fifth day of lactation it had dropped to 1.7 per cent. From that time the fat content decreased very slowly but quite consistently to 1.3 per cent on the twenty-first day of lactation. An exception was noted on the tenth day of lactation; at the time of the first estrus the fat content of the milk increased temporarily. Linton (21), in a study with Shetland ponies fed grass, found the fat content of their milk increased as lactation advanced. Kleinert (22) also found mare's milk richer in fat at the end of lactation than in the early stages. Baldwin and Longenecker (23) reported that the percentage of total fat in human milk increases as lactation progresses, and that the unsaturated fatty acids decrease and the saturated fatty acids increase from colostrum to mature milk. Henry and Morrison (24) stated that the fat content of sow's colostrum was nearly three times that of the mature milk of the species, i.e., 15.6 and 5.9 per cent respectively. Papp (25) reported that mare's milk contained 0.9 per cent fat in the winter and 1.3 per cent in summer. Hildebrant (26) assayed twenty-one samples of milk of three mares during April, May, and June and obtained for fat a range of from 0.10 to 3.35 per cent. Dittrich (27) determined the fat in twenty-eight samples of milk from four mares and found 0.10 per cent in

samples taken before the foal had sucked and 3.74 per cent fat in milk taken after the foal had sucked. This is in agreement with the general observation that strippings are always rich in fat. Mašek (28) reported a value of 2.22 per cent for the fat in milk and stated that except for a high lactose content, the composition of milk of the wild horse Przewalski corresponds to that of the domesticated horse. Linton (29) studied thirty-eight samples of mare's colostrum collected during the first three days of lactation. Four samples contained 5.64, 8.23, 12.47, and 13.13 per cent fat, respectively. The fat content of the other thirty-four samples ranged from .22 to 3.81 per cent and averaged 1.59 per cent, but no two samples contained the same amount of fat. Linton also reported that 104 samples of milk (non-colostral) from various breeds, taken from the fifth to the twenty-seventh day of lactation contained from .09 to 7.88 per cent of fat and averaged 1.59 per cent; again practically no two samples contained the same amount of fat.

In this study the amount of total solids in the mare's milk shortly after parturition averaged 16.5 per cent. One day later the average value was 12.1 per cent. From the second to the twenty-first day of lactation the total solids decreased slowly but quite consistently to 10.3 per cent. This quantity of total solids is essentially the same as previously reported by Holmes and co-workers (10) for the milk of three Percheron mares during late lactation namely, 10.2 per cent. In contrast to these findings, Linton (21) reported that the total solids of milk from grass-fed mares increased as the lactation period progressed. Papp (25) found 10.36 per cent total solids in winter mare's milk and 11.23 per cent in summer milk. Dittrich (26) obtained 9.12 per cent total solids in twenty-eight samples of colostrum and 12.92 per cent in the samples collected after the foals had sucked. Hildebrant (26) determined the total solids in twenty-one samples of milk collected from three mares at intervals from April to June inclusive and obtained a range of from 8.84 to 12.03 per cent. Linton (29) assayed thirty-eight samples of mares' colostrum, drawn during the first three days of lactation, and found from 9.47 to 28.88 per cent with an average of 14.90 per cent total solids. He also assayed 104 samples of milk produced between the fifth and 270th day of lactation and found a variation in total solids of from 5.93 to 18.74 per cent with an average of 10.96 per cent. Scarcely any two of the 104 samples contained the same amount of total solids. Furthermore, there was little if any correlation between the amount of total solids and the age of the mare or the stage of lactation, but in a series of samples of milk from "aged mares," ten to twenty-four years inclusive, the total solids showed less variation, i.e., 8.64 to 13.02 per cent with an average of 11.30 per cent.

The amount of ascorbic acid in the mare's colostrum and milk increased quite consistently from parturition to the sixteenth day of lactation after which it declined quite rapidly. At the first estrus after parturition, the amount of ascorbic acid, as well as the amount of fat, in the mare's milk increased temporarily. The values reported here are much higher than those reported by Holmes, *et al.* (10), but since the animals, season, stage of lactation, and other factors were not the same, it is not possible to account for the difference.

While the present study was terminated at the twenty-first day of lactation, it became possible to make subsequent assays for the ascorbic acid content of the milk of two mares. The values for Mare No. *1* from the fifty-second to the sixty-fourth day of lactation varied from 100 mg. to 130 mg. per liter, and for Mare No. *2* from the thirty-eighth to the forty-third day of lactation, ranged from 110 mg. to 124 mg. per liter. However, the mares were subsisting on lush pastures of rapidly growing mixed grasses, whereas, during the period when the samples of colostrum and early lactation milk were collected, they were being fed largely on dry hay which had been stored eight or nine months. Rasmussen and co-workers (3o) have called attention to the wide variation in the ascorbic acid content of mare's milk. Their values ranged from 27 to 115 mg. per quart.

Cimmino (31) determined the amount of ascorbic acid in twelve samples of mare's milk and found from 86.7 mg. to 196.6 mg. per liter—the maximum value being more than 225 per cent of the minimum. The range of the values from 27 mg. per liter (Rasmussen *et al.* [30]) to 196.6 mg. per liter (Cimmino [31]), the larger value being over 700 per cent of the smaller, naturally raises a question concerning the factor or factors responsible for this wide range.

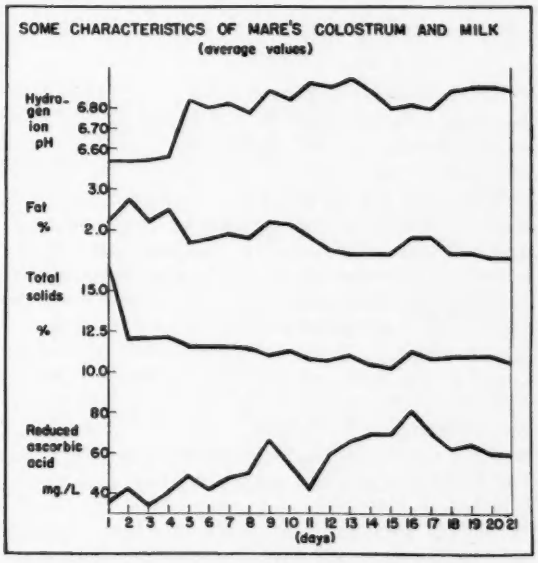

FIG. 1. *Average values of nutrients of mare's colostrum.*

Rasmussen *et al.* (32) have also called attention to the wide variation in the amount of ascorbic acid in another body fluid. They found from .19 mg. to 1.01 mg., with an average of .53 mg. of ascorbic acid per 100 gm. of mares' blood plasma. Davis and Cole (33) reported that the blood ascorbic acid values for good breeding Belgian and Percheron mares was 0.15 mg. per 100 gm. of plasma as against 0.07 mg. for difficult breeders. Pearson and co-workers (34) examined the blood of Shetland ponies and reported from 0.26 mg. to 0.39 mg. with an average of 0.32 mg. per 100 gm. plasma. Hart *et al.* (35) found from 0.18 mg. to 0.86 mg. per 100 gm. of blood plasma. Errington *et al.* (36) determined the amount of ascorbic acid in the blood plasma of 112 normal horses and found from 0.30 mg. to 1.76 mg., the values averaging .73 mg. per 100 gm. In contrast to these reported variations in the amount of ascorbic acid in blood plasma and in mare's milk, Vieth (37) stated that samples of mare's milk "agree very closely in their composition." However, in considering his data it should be borne in mind that all of the fifteen mares studied by him were from the same Tartary stable in the Russian Steppes, were accustomed to being hand-milked, were kept for providing milk for making koumiss, were of the same age and stage of lactation, were selected animals of one breed, and were fed and managed under identical and uniform conditions.

In considering the characteristics of mare's colostrum, it is of interest to note that Frenzel (38), during a study of the metabolism of young foals, found that the digestibility of colostrum during the first week of the foal's life is approximately 90 per cent and that the coefficient of digestibility of mare's milk nutrients gradually decreases as the age of the foal increases.

SUMMARY

Assays were made daily of the colostrum and early lactation milk produced by one Palomino and three Percheron mares. The experimental period was of fifteen days' duration for the Palomino and twenty-one days for the Percherons. Determinations were made of hydrogen ion concentration, fat, total solids and reduced ascorbic acid. The *p*H value of the colostrum was very stable for the first four days; on the fifth day it was decidedly higher and from the fifth to the twenty-first days it was quite constant. The fat content of the colostrum averaged 2.5 per cent for the first four days of lactation; from the fifth day it decreased slowly during the remainder of the experimental period. The quantity of total solids in the colostrum decreased very rapidly during the first two days and thereafter decreased slowly. The reduced ascorbic acid was relatively low in the colostrum but increased fairly steadily from the first to the sixteenth day of lactation and then decreased somewhat. At the first estrual period, which ordinarily occurs about nine days postpartum, both the fat and ascorbic acid content of the milk changed from the values obtained before or after the estrual period. All the mares were bred at the first estrus. The foals of the two mares that were bred late in the estrual period developed diarrhea, a condition which is not uncommon for the first postpartum estrus of mares.

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A.D.A. Cooperates with the Government Food Conservation Program

On Sunday, October 5, President Truman, in a radio address to the nation, announced a voluntary program of food conservation for the entire United States, explaining that such a step was necessary because of the needs of starving Europe. In order to save much needed grain for shipment to hungry countries, he asked that the American people voluntarily omit from their menus meat on Tuesdays and poultry and eggs on Thursdays. To lead this campaign, the President appointed a Citizens' Food Committee, headed by Charles Luckman.

When, on the following Friday, the Executive Board of the American Dietetic Association met in Philadelphia, unanimous action was taken that the Association should support this national food conservation program. A telegram was therefore drafted and sent to President Truman on Saturday, October 11, which read:

> WE, THE EXECUTIVE BOARD OF THE AMERICAN DIETETIC ASSOCIATION, IN SPECIAL SESSION PRECEDING THE 30TH ANNUAL MEETING IN PHILADELPHIA, PENNSYLVANIA, DO HEREBY PLEDGE SUPPORT OF THE GOVERNMENT'S FOOD CONSERVATION PROGRAM. AT THE SAME TIME WE WISH TO STRESS THE SERIOUS NEED OF SAVING FOOD BUT WITHOUT ELIMINATING FOOD VALUES ESSENTIAL TO THE HEALTH OF THE PEOPLE. THE NATION'S DIET MUST BE SAFEGUARDED, AND IT CAN BE THROUGH THE SUBSTITUTION OF FOODS WITH EQUIVALENT NUTRITIVE CONTENT. THEREFORE, THE AMERICAN DIETETIC ASSOCIATION, THROUGH ITS MEMBERS IN SUCH KEY POSITIONS AS HOSPITAL DIETITIANS, COMMUNITY NUTRITIONISTS, COLLEGE FOOD SERVICE DIRECTORS, SCHOOL LUNCHROOM SUPERVISORS, FOOD RESEARCH SPECIALISTS, INDUSTRIAL FOOD MANAGERS, HOTEL AND RESTAURANT ADMINISTRATORS, WILL, IN ADDITION TO SUPPORTING THE FOOD CONSERVATION PROGRAM, PLEDGE ASSISTANCE IN MAKING CERTAIN THAT NUTRITION IS IN NO WAY SACRIFICED.
>
> *Signed:* MABLE MACLACHLAN, PRESIDENT, THE AMERICAN DIETETIC ASSOCIATION

The next week, when the 30th Annual Meeting opened, Katharine A. Fisher, chairman of the Consumer Information Section of the Citizens' Food Committee, addressed the Association. As the Committee's representative, Miss Fisher, who is director of Good Housekeeping Institute and an A.D.A. member, brought a plea written by Mr. Luckman. It read in part: "At the present time your organization is one of the most important groups in the country, and we ask for your cooperation in the President's program for the conservation of food. Everyone should be concerned with world peace, security, and happiness. These can only be attained through conformity with this program."

Retention of the B Vitamins in Beef and Lamb After Stewing[1]

VI. Similarities and Differences Among the Four Vitamins

SYLVIA COVER, ESTHER M. DILSAVER, and RENE M. HAYS

Agricultural and Mechanical College of Texas, College Station

THE METHODS of procedure used in this investigation and the detailed results for each vitamin have been given separately in the preceding papers of this series (1, 2). However, since the analyses of the four B vitamins—thiamine, pantothenic acid, niacin, and riboflavin—were made on the same samples of meat, the cooking conditions were identical for all the vitamins and comparisons are valid. Likewise certain vitamin comparisons among the raw samples are pertinent.

VITAMIN FINDINGS FOR RAW MEAT

The vitamin content of the four samples of raw meat in each of the six replications was averaged according to the two logical combinations of the data: those associated with order of analysis and those associated with replicates (Table 1). The values are given on the moist and the dry, fat-free basis. Variations on the dry, fat-free basis are shown in three ways: difference between highest and lowest value, percentage difference, and F value (Table 2).

When the data were arranged by order of analysis, pantothenic acid in lamb was the only one in which a significant difference was observed. This difference was associated with an extra week of storage in the deep freezer and with doing the analyses on different days. It was 7.7 per cent above the smaller value. However, alternating the order of analyses with the cooking treatments should remove this variability from the cooked lamb stews. This is supported by a separate analysis of variance in which the values for raw meat were arranged in a purely arbitrary way according to their association with the amount of water used on the two cooking days. Here, too, the analyses were done at different times. No significant difference was found. It is probable that the cooking comparisons based on the amount of water were not affected by storage of meat in the deep freezer.

In beef, the difference between replicates was highly significant for all of the four vitamins except niacin. Groups of carcasses and unavoidable variations in time of storage (between time of slaughter and analysis) were the dominant factors associated with replicates in beef. Since these two factors cannot be considered independently in the statistical analysis, the data can only suggest the possibility of a real difference among beef carcasses.

In lamb, however, the storage periods were held constant. The difference between lamb replicates was highly significant for all of the four vitamins. Carcasses (or groups of carcasses) were the dominant factor associated with replicates. Validity for these differences was provided by taking into account the variation associated with doing the analyses at different times. It seems probable that these differences were real.

This observation is of unusual interest because both cattle and sheep are known not to require the B vitamins. McElroy and Goss (3–5) have shown that sheep synthesize thiamine, pantothenic acid, and riboflavin in the rumen. An excretion study by Winegar, Pearson, and Schmidt (6) also indicated the synthesis of niacin. McElroy and Goss (3, 4) and Wegner *et al.* (7, 8) have reported that cattle synthesize pantothenic acid, niacin, and riboflavin in the rumen. Further studies by Hunt and coworkers (9, 10) and Lardinois and associates (11) have shown that the amount of the synthesis is affected by the carbohydrate content of the ration. From the work of Hunt and co-workers (9, 10), Lardinois and associates (11), McElroy and Goss (4), and Wegner *et al.* (7, 8) it appears that the synthesis of thiamine in the rumen of cattle is not so well established.

[1] Received for publication March 27, 1947. Supported in part by a grant from the National Live Stock and Meat Board.

TABLE 1

Variation in vitamin content of raw meat

COMPARISON	NO. OF SAMPLES	THIAMINE		PANTOTHENIC ACID		NIACIN		RIBOFLAVIN	
		Beef	Lamb	Beef	Lamb	Beef	Lamb	Beef	Lamb
Content on moist basis									
		mcg./gm.	*mcg./gm.*	*mcg./gm.*	*mcg./gm.*	*mcg./gm.*	*mcg./gm.*	*mcg./gm.*	*mcg./gm.*
Order of analysis									
First	12	1.47	1.72	4.26	5.25	50.73	52.17	2.18	2.21
Second	12	1.44	1.75	4.20	4.93	51.77	51.63	2.11	2.28
Replicates									
Largest	4	1.98	2.22	5.24	5.72	53.49	57.05	2.35	2.52
Smallest	4	1.07	1.40	3.51	4.77	49.55	43.93	1.90	2.07
Content on dry, fat-free basis									
Order of analysis									
First	12	7.11	8.79	20.63	26.80	245.0	266.2	10.55	11.32
Second	12	6.94	8.80	20.32	24.89	251.0	260.3	10.22	11.48
Replicates									
1	4	7.84	8.22	25.28	24.75	243.3	262.9	10.32	12.91
2	4	9.32	9.33	16.48	25.49	244.6	257.4	11.03	11.58
3	4	8.67	11.72	19.90	25.16	256.8	231.9	11.33	11.37
4	4	5.50	7.01	18.40	28.65	256.2	269.8	10.81	10.57
5	4	5.50	8.34	22.43	24.30	238.9	287.2	9.30	10.40
6	4	5.33	8.15	20.37	26.73	248.3	270.5	9.51	11.57

There are no clues as to why the carcasses of some of the animals used in this study had higher B vitamin content than others, because production histories could not be obtained during the emergency period when this meat was purchased. Whether the factors which control the B vitamin deposition in the meat are environmental or genetic must be determined by further research.

RESULTS OBTAINED FROM COOKED STEWS

It is convenient at times to have available one value for vitamin retention. Such a value has been obtained by averaging together all cooking processes for each vitamin (Table 3). Ranges among cooking processes are also given. Average total retention after stewing was about 50 per cent for thiamine, 75 per cent for pantothenic acid, and 100 per cent or above for niacin and riboflavin. The high retentions of niacin and riboflavin have been discussed in Parts IV and V of this series (1, 2).

Average retention varied according to the vitamin and the cooking process. Comparative total retentions of the four vitamins were arranged by cooking variables (Table 4). Significant differences based on the dry, fat-free content of the cooked meat are indicated by stars.

Browning significantly affected the total content of all of the four vitamins except niacin in beef when considered from a statistical point of view (Table 4). The temperature of browning was approximately 220°C. (396°F.). During the first few minutes of browning a considerable amount of juice collected in the saucepan. By the end of the 10-min. browning period, the water in the meat juice had evaporated and the residue had browned. It seems likely that any of the vitamins in it would have been destroyed. However, thiamine and pantothenic acid were the only ones in which the difference caused by browning was 10 per cent or more of the total (Table 5). Even with thiamine, browning reduced the supply of the vitamin by an amount too small to be of practical importance in comparison with the recommended daily allowance.

Temperature of stewing affected significantly the retention of only pantothenic acid in beef (Table 4). It was also the only case in which the greatest difference caused by temperature was more than 10 per cent (Table 5). This may be surprising because thiamine is generally considered less stable to heat than pantothenic acid, yet thiamine was not affected by the stewing temperature to a significant extent. Since the cooking times were adjusted to obtain equal tenderness with all temperatures, it is assumed that these adjustments in time also compensated for the temperature effect on thiamine in both beef and lamb and on pantothenic acid in lamb. No reason for the unexpected behavior of pantothenic acid in beef was

TABLE 2

Statistical treatment of variations found in vitamin content of raw meat

VITAMIN	ORDER OF ANALYSIS			REPLICATES		
	Greatest difference†		F value††	Greatest difference†		F value††
Beef						
	mcg./gm.	%‡		*mcg./gm.*	%‡	
Thiamine	0.17	2.4	0.42	3.99	75	19.49**
Pantothenic acid	0.31	1.5	0.38	8.80	53	56.95**
Niacin	6.0	2.4	1.75	17.9	7	2.78
Riboflavin	0.33	3.2	1.35	2.03	22	11.31**
Lamb						
Thiamine	0.01	0.1	0.00	4.71	67	28.29**
Pantothenic acid	1.91	7.7	18.79**	4.35	18	13.80**
Niacin	5.9	2.3	1.80	55.3	24	25.13**
Riboflavin	0.16	1.4	0.07	2.51	24	37.78**

† Highest content minus lowest. Calculated on dry, fat-free basis.

†† Calculated from raw content on dry, fat-free basis.

Error terms were: Order = order × replicates

Replicates = remainder after removal of replicates + order + (order × replicates).

‡ Calculation = $\frac{\text{greatest difference} \times 100}{\text{lowest content}}$.

** Highly significant difference. F values needed for high significance on the 0.01 level were: order 16.26, replicates 5.06. (F values for significance on the 0.05 level were: order 6.61, replicates 3.11).

apparent. However, dietary allowances for this vitamin have not been set up, and the practical effect of temperature for stewing beef cannot be estimated.

The *amount of water* in which the stews were cooked had a significant effect only on the total retention of riboflavin in lamb (Table 4). No satisfactory explanation for this is afforded by the data of this study. However, since none was lost during stewing, the practical effect may not be important.

Distribution of the vitamins between the meat and the broth varied considerably among the four vitamins (Table 6). This, however, is of practical importance only if some of the broth is discarded. This may occur when a large amount of water is used for cooking. It is of interest, therefore, that with all of the vitamins the proportion found in the broth was larger with the larger amount of cooking water. This follows the usual trend observed in vitamin extraction studies. Yet, in the same stews and under identical cooking conditions, the different vitamins were not equally well extracted. When the large amount of water was used for cooking, 42 to 45 per cent of the total riboflavin found after cooking was in the broth, but about 50 per cent of the total pantothenic acid and 55 per cent of the total niacin. With the smaller amount of water, about 35 per cent of the riboflavin found after cooking was in the broth and about 40 per cent of the total niacin and pantothenic acid. Under these conditions riboflavin appeared to be the least and niacin the most easily extracted of these three vitamins.

TABLE 3

Average retention of entire cooked stew

VITAMIN	RETENTION			
	Average*		Range**	
	Beef	Lamb	Beef	Lamb
	%	%	%	%
Thiamine	52	55	43–67	41–66
Pantothenic acid	78	75	67–97	67–82
Niacin	108	100	97–116	95–104
Riboflavin	107	113	101–114	103–120

* Based on seventy-two samples. Results of all cooking processes were averaged together.

** Each value is the average of six replicates. The range is for twelve different cooking procedures.

Thiamine was the only one of the four vitamins for which the percentage extraction differed to any extent for the two kinds of meat. The small proportion of thiamine in the broth suggests either that thiamine is less easily extracted than the other three vitamins or that the thiamine is more easily destroyed in the broth than in the small pieces of stew meat.

The dietary allowances for moderately active men recommended by the Food and Nutrition Board of the National Research Council (12) may be used for comparing the practical nutritive value of foods. Measured in this way, a serving of meat stew furnishes 6 to 9 per cent of the thiamine, about one third of the niacin, and about 10 to 15 per cent of the riboflavin recommended daily. No recommendations have been made for pantothenic acid. Browning was the only cooking variable which affected all of the vitamins to an extent which was statistically significant, yet for none of the vitamins was the effect as great as 2 per cent of the recommended daily allowance. This is too small to be of practical importance, unless the food supply is severely limited.

SUMMARY

Practical dietary considerations allow:

(a) Browning of the meat for stews.

(b) Cooking stews by simmering, boiling, or in the pressure saucepan at 15-lb. pressure (if cooking times are just sufficient to obtain tenderness).

(c) Cooking in large or small amounts of water (if all of the broth is used).

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TABLE 4

Retention of entire cooked stews arranged by cooking variables

VARIABLE	NO. OF SAMPLES	RETENTION†							
		Thiamine		Pantothenic acid		Niacin		Riboflavin	
		Beef	Lamb	Beef	Lamb	Beef	Lamb	Beef	Lamb
		%	%	%	%	%	%	%	%
Browned	36	48*	50*	75**	71**	105	99*	105*	111**
Not browned	36	56	60	82	78	110	102	109	114
Pressure-cooked	24	52	52	85*	76	108	99	105	112
Boiled	24	49	56	74	73	107	101	107	113
Simmered	24	55	57	77	75	108	101	107	114
Large amount of water	36	55	54	84	74	112	100	114**	121**
Small amount of water	36	49	57	73	76	104	101	99	105

† Calculated from content on dry, fat-free basis.
* Significant difference, calculated from dry, fat-free content of cooked meat.
** Highly significant difference, calculated from dry, fat-free content of cooked meat.

TABLE 5

Total vitamin content and differences associated with cooking variables

VARIABLE	THIAMINE†		PANTOTHENIC ACID†		NIACIN†		RIBOFLAVIN†	
	Beef	Lamb	Beef	Lamb	Beef	Lamb	Beef	Lamb
	mcg./gm.	*mcg./gm.*	*mcg./gm.*	*mcg./gm.*	*mcg./gm.*	*mcg./gm.*	*mcg./gm.*	*mcg./gm.*
Browned††	3.35	4.42	15.23	18.27	260.8	260.1	10.82	12.64
Not browned††	3.95	5.25	16.80	20.22	271.8	268.3	11.30	13.05
Difference	0.60*	0.83*	1.57**	1.95**	11.0	8.2*	0.48*	0.41**
Percentage of difference‡	15	16	9	10	4	3	4	3
Pressure-cooked‡‡	3.68	4.62	17.31	19.57	267.3	261.6	10.94	12.67
Boiled‡‡	3.45	4.98	15.06	18.88	265.6	266.3	11.10	12.91
Simmered‡‡	3.81	4.89	15.67	19.28	266.0	264.7	11.14	12.96
Greatest difference	0.36	0.36	2.25*	0.69	1.7	4.7	0.20	0.29
Percentage of difference ⁂	10	8	15	4	1	2	2	2

† On dry, fat-free basis.
†† Each value was an average of thirty-six samples.
‡ Content of not-browned stews was considered as 100 per cent.
‡‡ Each value was an average of twenty-four samples.
⁂ Lowest value was considered as 100 per cent.
* Significant difference.
** Highly significant difference.

TABLE 6

Distribution of vitamins between meat and broth

AMOUNT OF WATER	THIAMINE†			PANTOTHENIC ACID†			NIACIN†			RIBOFLAVIN†		
	Meat	Broth	F value††	Meat	Broth	F value††	Meat	Broth	F value††	Meat	Broth	F value††
Beef												
	%	%		%	%		%	%		%	%	
Large	74	26	‡	47	53	1.98	45	55	11.37*	58	42	24.57**
Small	84	16	‡	61	39	13.44*	62	38	85.41**	68	32	60.47**
Lamb												
Large	64	36	‡	50	50	0.00	45	55	48.79**	55	45	11.75*
Small	75	25	‡	59	41	33.66**	63	37	364.46**	64	36	135.09**

† Each value is an average of thirty-six samples.
†† Based on dry, fat-free values.
‡ Not needed.
* Significant difference.
** Highly significant difference.

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Hereditary Factor in Susceptibility to Dental Caries

The U. S. Public Health Service recently conducted a survey to determine whether an environmental factor, such as fluoride in the drinking water, can overcome, and perhaps obscure, the more basic factor of familial susceptibility in dental disease.

For the study, subjects were taken from the population of an area in New Jersey where the water supply was accidentally "fluorinated" in 1927, when the water sources were changed from shallow wells (presumably fluorine-free) to deep wells containing naturally from 1.4 to 2.2 p.p.m. fluoride. As a consequence, the older population above the age of thirty—the parents—consumed non-fluoride water during the first ten years of their lives when most of their caries experience occurred, whereas their children under nineteen years of age had been exposed to fluoride water all of their lives.

To make the analysis, examinations were made of 123 fathers and 131 mothers who were the parents of children born and reared in the fluoride area. These adults were separated into three broad dental disease susceptibility groups—lowest susceptibility, mid-range susceptibility, and highest susceptibility. Children were also classified in the same manner according to their DMF (decayed, missing, and filled teeth) rate.

It was found that while on the whole the DMF rate of children was extremely low for the area, nevertheless some of the children did exhibit dental caries or show evidence of having been attacked, in some instances to a marked degree. Therefore, it was seen that all children exposed to fluoride waters had not been protected against caries to the same extent. Analysis of findings for the groups as a whole showed that children of high DMF fathers have higher DMF rates at almost every age than do the children of fathers with low DMF rates. Likewise the children of high DMF mothers had a higher DMF rate at every age than the children of mothers with a low DMF rate.

Too small a number of couples was found with like ratings to make a comparison between rates of chidren of such marital pairs.

From this study, then, it appears, that caries experience in children is determined, among other factors, by familial suceptibility. Exposure to an environmental factor (fluorine in the water or diet) will reduce the amount of caries attack, but not sufficiently to obscure the influence of the constitutional familial factor.—*Abstracted from Public Health Reports 62: 1947 (August 29) 1947.*

Pantothenic Acid as a Factor in Prolonging Life

Dr. Thomas S. Gardner, recently reported that the royal jelly secreted by worker bees, which constitutes the queen bee's food, is at least partially responsible for the queen's average longevity of five years as compared to three months for the workers. When the royal jelly was separated into its chemical components and tested on fruit flies, it was found that pantothenic acid produced a 27 per cent increase in longevity when used in quantities of ½ gm. per 100 gm. of food consumed. Pyridoxine increased the life span of fruit flies by 10 per cent, but biotin had no effect. A mixture of biotin, pyridoxine, sodium yeast nucleate, and panthothenic acid in the concentration found in royal jelly increased the life span by 46 per cent.—*New York Times, September 21, 1947.*

HELEN A. HUNSCHER

President of the American Dietetic Association

Editorial

HELEN A. HUNSCHER, PRESIDENT OF THE AMERICAN DIETETIC ASSOCIATION

A new science that brings hope for the health and welfare of mankind must have standard bearers of rugged and fearless pioneering stock if the horizons are to be extended and greater service rendered. A world with its economics in chaos, filled with frustrated, heart-sick and starving men, women, and children, demands that its best minds and greatest talents be brought to bear upon saving mankind from intellectual disintegration and eventual destruction. With the high standards maintained by the American Dietetic Association, it was natural that Helen A. Hunscher should be chosen to pilot the Association during one of the most trying times in world history. The rugged, pioneering stock from which Dr. Hunscher descended provided a background which has served her well during the past and will do so in the years ahead. The incoming President of the Association is proud of and inspired by the achievements of her ancestors. Halsey Gates, her great-grandfather, migrated from Connecticut to Ohio and settled in Connecticut Western Reserve in 1826, built a grist mill and a saw mill on the Chagrin River, 16 mi. southeast of Cleveland, and served his fellow men and his country in that community, now known as Gates Mills, Ohio. As an efficient, gracious, kindly, and thoughtful hostess in the home which is one of the landmarks of the area and serves as a community center for many friendly and social gatherings, Dr. Hunscher continues to perpetuate gracious living.

Those of us who were privileged to know Cora Knapp Hunscher Emery, Dr. Hunscher's mother, can well understand how easy it was to acquire the ways of a good and useful life from her. When her husband died in 1908 Mrs. Emery was left without means but with the responsibility for the full support of a twelve-year-old son, an eleven-year-old daughter, and Helen, who was four years old. This kindly, understanding, and generous mother was able to raise and support her family by being the telephone operator and then the postmaster of the village and at the same time found it possible to devote a large share of her energy to service for the community. She served on the school board, attaining the presidency, and on the Board of the Village church, thus contributing to the making of Gates Mills as a better place in which to live. Helen Hunscher attended the village school, played with the village children, waded the Chagrin River, and otherwise enjoyed a wholesome childhood. She became a leader in the Camp Fire Girls, taught a Sunday School class while still in high school, and contributed to the family income by working in the village telephone exchange during vacations from high school and college.

Helen Hunscher graduated *cum laude* from Ohio State University in 1925. Her graduate work culminated in 1932 when she received the degree of Doctor of Philosophy in Home Economics from the University of Chicago. During her first year of graduate study, 1925–26, she was sent to Merrill-Palmer School, Detroit, as a student representative from Ohio State University. In 1926–27 she was a Merrill-Palmer School Fellow in the Nutrition Research Laboratories of the Merrill-Palmer School and the Children's Hospital of Michigan, and she continued her work in the following year as a Laura Spellman Rockefeller Fellow. In 1928–29 she was on the staff of this laboratory and in 1929–30 she was a National Research Council Fellow in Child Development at the University of Chicago. Her professional teaching career began in 1930–31 when she did her first college instruction at the University of Chicago. After receiving her doctorate she returned to Detroit as research associate in the Research Laboratory of the Children's Fund of Michigan (formerly the Nutrition Research Laboratories of the Merrill-Palmer School and the Children's Hospital of Michigan). During this period (1931–1937) she was also professorial lecturer in nutrition for Wayne University, Detroit. Since 1937 Dr. Hunscher has been professor and head of the Department of Home Economics, Western Reserve University, Cleveland.

Always a leader in any activity in which she participated, as an undergraduate at Ohio State University, Helen Hunscher held offices in the Home Economics Club; was president of Phi Upsilon Omicron, an honorary Home Economics Sorority, and of Sigma Kappa, her social sorority, in 1923-24. In 1924–25 she was a member of the cabinet of the Young Women's Christian Association. Her election to Phi Beta Kappa occurred in 1925 and to Omicron Nu in 1927. As a graduate student at the University of Chicago, two honorary organizations elected her to be a member: Sigma Delta Epsilon, in 1930, and Sigma Xi, in 1930. While in Detroit,

Dr. Hunscher was assistant editor of the *Detroit Chemist;* vice-president of the Detroit Section of the American Chemical Society in 1936–37; and president of the Detroit Dietetic Association in 1934–35.

Dr. Hunscher's professional activities in addition to teaching in and directing the Department of Home Economics at Western Reserve University are extensive. She was chairman of the Nutrition Committee of the Welfare Federation of Cleveland from 1937 to 1947; co-chairman of the American Red Cross Nutrition Service Committee of the Greater Cleveland Chapter from 1942 to 1946; and chairman of the Professional Advisory Committee and member of the Board of the Nutrition Association of Greater Cleveland since 1946. She was the first woman president of Sigma Xi at Western Reserve University in 1945–46; secretary of the graduate school faculty in 1941–42, and has been a member of its executive committee since 1946.

Notwithstanding the demands of a most successful professional career she enjoys the privileges and obligations of a happy home and family life. In 1939 she was married to Howard Paul Wilkinson and together they have made a home for Dr. Hunscher's stepfather, uncle, and nephew and Mr. Wilkinson's son and daughter. Their home is one of continuous activity in which all take pleasure in sharing responsibilities as well as pleasures.

Dr. Hunscher has won election to the American Institute of Nutrition, the Society for Experimental Biology and Medicine, and the Society for Research in Child Development. As a member of the American Home Economics Association she served as chairman of the Food and Nutrition Division in 1945–46. She has been a member of the Advisory Committee of Nutrition Service of the American Red Cross since 1945 and is a member of the newly formed Committee on Institutional Feeding of the Food and Nutrition Board, National Research Council. She has been an active working member of the American Dietetic Association since 1932, participating in its endeavors as Chairman of the Professional Education Section from 1942 to 1945, as Vice-President in 1945–46, and as President-Elect in 1946–47.

She has used to advantage her heritage from pioneers and attained eminence as a student, as an investigator, and as a teacher of nutrition and dietetics as they pertain to health and welfare, especially of mothers and children. She is author or co-author of some fifty scientific papers. With her participation in the leadership of diverse local and national organizations, her experience constitutes fifteen years of grooming for the highest office of the American Dietetic Association. She is highly qualified and thoroughly prepared to give the American Dietetic Association distinguished service as its president in 1947–48.

Editor's note: The above editorial was written for the JOURNAL by Dr. Icie Macy Hoobler, director, Research Laboratory, Children's Fund of Michigan, under whom Dr. Hunscher worked from 1925 to 1937, except for two years spent at the University of Chicago

New Appointments, Veterans Administration

The following hospital appointments of dietitians (not previously announced) have been made by the Veterans Administration.

Name	Position	Location
	Branch No. 1	
Kathleen Doyle	Staff Dietitian	Rutland Heights, Mass.
	Branch No. 2	
Dorothy Horridge	Staff Dietitian	Lyons, N. J.
Helen Keller	Staff Dietitian	Aspinwall, Pa.
Frances Margut	Chief Dietitian	Lebanon, Pa.
	Branch No. 5	
Jean Alde	Staff Dietitian	Kennedy, Memphis, Tenn.
Josephine Anderson	Head Dietitian	Chamblee, Ga.
Fredericka Huggins	Staff Dietitian	Columbia, S. C.
Besse G. Lay	Staff Dietitian	Memphis, Tenn.
Betty Lewis	Staff Dietitian	Montgomery, Ala.
Anna M. Long	Staff Dietitian	Columbia, S. C.
Mildred Moore	Staff Dietitian	Kennedy, Memphis, Tenn.
Onie Murphy	Staff Dietitian	Tuscaloosa, Ala.
Virginia Tabor	Staff Dietitian	Kennedy, Memphis, Tenn.
Mildred M. Walker	Staff Dietitian	Atlanta, Ga.
	Branch No. 7	
Emma Dugan	Staff Dietitian	Hines, Ill.
Kathleen Heller	Staff Dietitian	Hines, Ill.
Vernice Jennrich	Staff Dietitian	Hines, Ill.
Helen Maloney	Staff Dietitian	Hines, Ill.
Edwina McDonald	Staff Dietitian	Hines, Ill.
Gertrude Wlos	Staff Dietitian	Marion, Ill.
	Branch No. 8	
Etunic Axtell	Head Dietitian	Hot Springs, S. D.
Helen Ehlert	Head Dietitian	Knoxville, Iowa
	Branch No. 12	
Hilda Fall	Staff Dietitian	Los Angeles, Calif.

Current Comment

OPPORTUNITIES FOR DIETITIANS IN THE PEACETIME ARMY

MAJOR HELEN C. BURNS

Chief, Dietetic Consultants Division, Office of The Surgeon General, War Department

Attractive opportunities for both personal and professional advancement have been provided by the Army Medical Department for dietitians who can qualify for commissions in the new Women's Medical Specialist Corps.

Created by Act of Congress on April 16, 1947, the Women's Medical Specialist Corps is an organization of career Army dietitians, physical therapists, and occupational therapists. Its members are officers of the Regular Army, with permanent commissions which entitle them to all the benefits provided for male Army officers. Its present minimum authorized strength is 409 officers, ranging in grade from second lieutenant to major, with three officers holding temporary appointments as lieutenant colonels and one temporarily commissioned a full colonel.

In addition to this career organization, there is also a Women's Medical Specialist Corps Section of the Officers' Reserve Corps, which offers temporary reserve commissions to qualified dietitians and therapists. These Reserve officers are eligible—during the current shortage of Army dietitians—for extended active duty with the peacetime Army, during which service they receive most of the benefits and advantages provided for career officers.

Dietitians have occupied an increasingly important role in the Army since the time of World War I, but never before has the War Department been able to offer them the advantages of a career service. The benefits now available, not only to Regular Army dietitians but to Reserve dietitians on extended active duty, deserve consideration by all dietitians.

The Army dietitian now shares the advantages of the increased pay scales established in 1946 for all Army officers. Additional benefits include provisions for advancement in grade and periodic pay increases on the basis of longevity. There are important Army perquisites, too, such as thirty days a year of accruable leave with full pay and allowances, medical care and hospitalization, unlimited sick leave with pay, and retirement with pay for disability. In addition, dietitians commissioned in the Regular Army have the assurance of a lifetime career with continuing opportunities for advancement and retirement with substantial pay after twenty years' service or on reaching the age of fifty.

So far as pay is concerned the income of an Army dietitian includes not only her base and longevity pay but also her rations allowance, quarters allowance (if living accommodations are not furnished by the Army) and, currently, the benefit of a $1500 federal income tax deduction allowed on Army pay. Base pay amounts to $180 a month for second lieutenants, $200 for first lieutenants, and $230 for captains. Longevity pay adds 5 per cent to the base pay for each three years of commissioned military service; for instance, a captain with twelve years' service receives $46 a month in longevity pay in addition to her $230 base pay.

The rations allowance approximates $21 a month, and the quarters allowance, for officers without dependents, is $45, $60, and $75 a month, respectively, for each of the three grades listed above. Officers with legal dependents receive additional allowances for rations and quarters totaling about $36 a month. The allowances paid to Army officers are not subject to income taxes. The captain with twelve years' service and no legal dependents, therefore, receives a total income of about $372 a month, of which $221 is exempt from federal income taxes under the present tax schedule.

All Army dietitians on extended active duty, whether they are Regular Army or Reserve, receive the benefits of a new promotion schedule recently authorized by Congress. This calls for advancement of second lieutenants to the grade of first lieutenant after three years of active military service. Similarly, first lieutenants on active duty are promoted to the grade of captain, subject to a qualifying examination, when they have a total of seven years of active service. Promotions to major and higher grades are by selection.

All officers commissioned in the Women's Medical Specialist Corps are appointed for life, subject to continuing professional competence. However, they may resign their commissions at any time under provisions approved by the Secretary of War. This

means that for the duration of their professional careers, all Regular Army dietitians are assured of their positions, in good times or bad, and can count on advancing in grade and pay.

When they retire they receive a generous lifetime pension. An officer retired for physical disability at any time receives three quarters of her base and longevity pay every month for the rest of her life. All officers are eligible for retirement after twenty years of service at 2½ per cent of their base and longevity pay multiplied by their years of service. Regardless of length of service, all Regular Army dietitians in the grades of second lieutenant, first lieutenant, or captain may be retired at the age of fifty, and Regular Army majors may be retired at the age of fifty-five.

The opportunities for professional advancement offered dietitians in the Women's Medical Specialist Corps are continually expanding. The Medical Department of the Army has long pioneered in this field, and its long range peacetime research program promises important developments in the science of dietetics. Army dietitians are expected to maintain their professional skill in all fields of dietetics. They will have opportunities to specialize in administrative and therapeutic work. Due to the variation in the sizes of Army hospitals and the rotation policy of assignments, Army dietitians receive experience in both large and small hospitals. The Army dietitian also has greater opportunities than ever before to travel and see the world, for the Army operates hospitals throughout the world.

Candidates for Regular Army commissions as dietitians in the Women's Medical Specialist Corps are currently limited to women between the ages of twenty-one and twenty-seven, inclusive, who have satisfactorily served for a period of time as commissioned dietitians in the Women's Medical Specialist Corps Section of the Officers' Reserve Corps. They must be citizens of the United States. Women who are married or who have dependent children under fourteen years of age will not be appointed in the Regular Army.

The qualifications for dietitians in the Officer Reserve Corps are high. The age limitations are from twenty-one to forty-four, inclusive, for applicants who served as commissioned Army dietitians during the war; and from twenty-one to twenty-seven for candidates who have had no wartime Army experience. There are no restrictions on marital status or age of dependents, except for Reserve officers volunteering for extended active duty. All applicants must be citizens of the United States. In addition, they must possess a bachelor's degree from an approved college or university with a major in either foods and nutrition or in institution management and have completed a dietetic internship approved by the Surgeon General. Three years of experience, one of which must have been within the past ten years, at a hospital or hospitals, may be substituted for the dietetic internship provided that this experience includes diet therapy; adequate menu, food preparation, and service planning; food cost control; food supplies and equipment planning.

Application forms for Reserve or Regular Army commissions may be obtained from Army area headquarters, general hospitals, Office of The Surgeon General, Washington, D. C., or the American Dietetic Association.

THE PROBLEM OF SUPPLYING MILK FOR THE SCHOOL LUNCH PROGRAM[1]

MARTHA E. HOLLINGER and CORNELIA P. STAPLES

Department of Agricultural Chemistry and Biochemistry, Louisiana State University, Baton Rouge

In many states the problem of obtaining a supply of milk for the school lunch program which is adequate in amount and free from the danger of carrying infection is a serious one. Rural consolidated schools and small villages are often in areas where large quantities of milk are produced and shipped to distant markets, but, because the community affords no pasteurization facilities, the milk does not qualify for use in the schools. In other areas little or no milk is produced. In such areas, the supply of milk for the school lunch program is especially important, since the homes are unable to obtain an adequate amount of fresh milk and are unlikely to use milk in other forms in optimum quantities.

In December, 1946, a representative month, 85 per cent of the schools in continental United States which qualified for reimbursement under the School Lunch Act served milk (1), but in the South, the percentage was only 70. In Louisiana, however, less than half of the schools coming under the school lunch program served milk—42 per cent. Thus a need for a larger supply of milk or a better distribution of existing supplies in this state was clearly indicated.

In the spring of 1947 an experiment was conducted to determine to what extent reconstituted evaporated milk could be used in beverage form to supply the need for milk in the school lunch. Seven consolidated white schools representing seven parishes (counties) in different parts of the state were furnished with sufficient evaporated milk for all children to have a full glass of reconstituted milk each school day for a month. None of the schools had an available supply of fresh milk at the time the experiment was started, although School No. 1 had served pasteurized milk whenever the local dairy was able to

[1] This study was made possible by a grant from the Evaporated Milk Association. Received for publication August 27, 1947.

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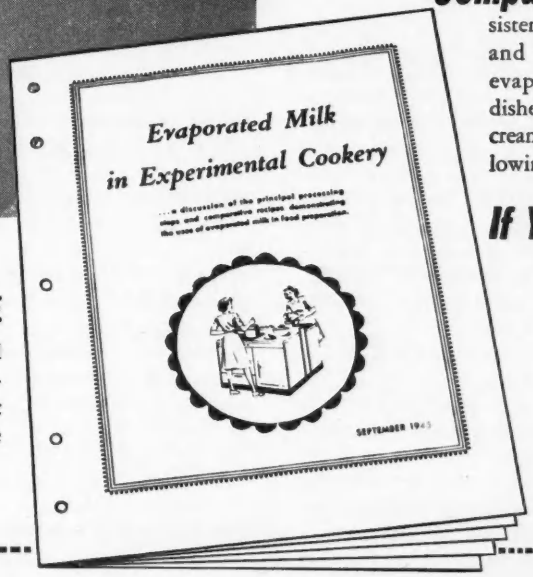

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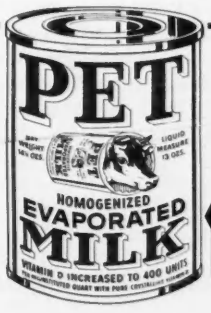

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TABLE 1

Consumption of reconstituted evaporated milk in seven schools over a four-week period

SCHOOL	GRADES	FIRST WEEK		SECOND WEEK		THIRD WEEK		FOURTH WEEK		AVERAGE FOR FOUR WEEK PERIOD	
		No. served	% consuming one glass	No. served	% consuming one glass	No. served	% consuming one glass	No. served	% consuming one glass	No. served daily	% consuming one glass
No. 1	1- 3	693	97	508	95	705	96	729	97	132	97
	4- 6	558	92	551	91	567	92	719	91	119	91
	7-12	485	75	500	83	562	76	629	80	106	79
No. 2	1- 3	209	62	225	64	226	53	219	57	44	59
	4	251	64	245	64	223	65	229	66	47	66
No. 3	1- 3	250	99	268	99	190	97	200	98	45	98
	4- 6	380	96	361	90	290	84	301	76	67	88
	7-12	274	90	230	85	197	80	225	85	46	86
No. 4	1- 3	660	83	321	80	556	75	515	75	112	78
	4- 6	503	89	333	79	449	75	529	77	100	80
	7-12	394	65	234	58	397	56	444	54	86	58
No. 5	1- 3	230	90	326	98	326	98	324	96	60	96
	4- 6	278	93	219	97	220	95	335	97	53	96
	7-12	238	75	265	66	305	66	274	63	54	66
No. 6	1- 3	731	92	879	91	833	95	840	94	164	93
	4- 6	533	85	582	83	561	93	557	94	112	89
	7-12	379	84	445	88	417	94	423	98	83	89
No. 7	1- 3	371	80	369	91	420	91	474	86	82	87
	4- 6	165	44	235	45	181	51	183	72	38	53
	7-12	93	41	164	24	125	25	136	45	25	33

supply it. During the first week, a worker was present in the school lunchroom each day to help with the serving and to give assistance in keeping simple records of the number of children eating in the lunchroom and the number consuming a full glass of milk. The worker also wrote a report concerning interest and participation of teachers in the school lunch program, attitude of other school lunch personnel, and any other conditions deemed important. After the first week the records of children served and the number drinking milk were kept by teachers and mailed to the worker.

In most cases the cans of evaporated milk were opened in the afternoon, and the milk was mixed with an equal quantity of water, covered, and kept in a refrigerator until it was served. When there was not enough time for chilling, ice water was used for diluting. The milk was always served with the regular noon lunch. No flavoring of any kind was used. Any brand of evaporated whole milk available at the local wholesale grocery was purchased. Precautions were taken, however, to see that the reconstituted evaporated milk was always cold and protected from "off" flavors which might be derived from other foods in the refrigerator or from lack of thorough cleanliness of containers. No effort was made on the part of the field worker to influence the children's acceptance of the milk.

Upon compilation of data from the records it was evident that on the whole the milk was well accepted (Table 1), although considerable difference was noted in the acceptance by comparable age groups in the different schools.

In most schools the acceptance of the milk was good at all ages but was somewhat better with younger children. In a previous study (2) an even greater difference between age groups in this respect was found. Similarly, in a recent pilot study of the acceptance of reconstituted non-fat dry milk solids (3) a slight difference was found between younger and older children in their acceptance of the milk. In that study, also, a greater difference was found in the acceptance by comparable age groups in different schools. This greater willingness on the part of younger children to accept unfamiliar foods is well known to many who deal with the eating habits of children. It is, however, often overlooked, and the years most favorable for developing familiarity with a wide variety of essential foods are neglected.

In the present study it was evident from the reports that the interest and participation of principals and teachers was a very important factor in

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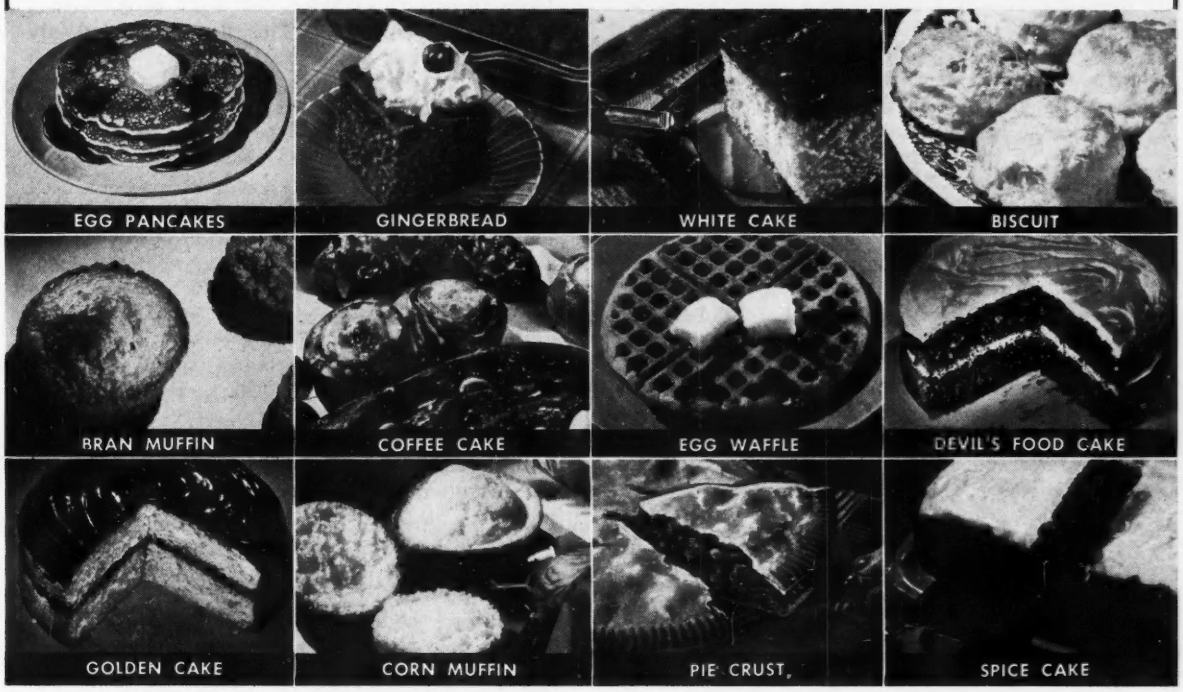

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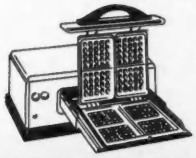

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the willingness of children to accept a food to which they were not accustomed. For example in School No. 1 (a rural consolidated school), all of the teachers and the principal ate in the school lunchroom. It was customary for each elementary teacher to sit with her own pupils while high school teachers came to the lunchroom with the classes they had taught the previous hour. The teachers and principal were all eager for the children to have the milk. They set the example by drinking the milk regularly as well as teaching in the classroom what evaporated milk is and the importance of drinking milk every day.

In School No. 3 the teachers and principal were equally interested. Although they did not sit with the children, they were present in the lunchroom, had told the children in their classes about the milk, and had asked for the privilege of giving milk to children who brought lunches from home. They answered questions about the milk in the classrooms with interest and showed clearly that they felt that the milk was a valuable addition to their school lunch.

The influence of children who were leaders was noticeable in several situations. The enthusiasm of the children in School No. 3 over having milk available at lunch increased the attendance in the lunchroom considerably. In another school one boy, accustomed to an abundance of fresh milk at home, developed a sudden desire to eat at school because he heard others talk about "that good milk." On the other hand, one group of fourth grade girls in School No. 2 refused milk for a number of days, although they had previously seemed to enjoy it, when one of their number said one day, "I'm not going to drink any milk, are you?" In another school none of the girls in the tenth grade drank milk.

An influence unfavorable to the entire school lunch program was the familiar store across the street where children could spend pennies for sweets to satisfy appetite when the more desirable protective foods (usually vegetables and milk) in the school lunch had been ignored. This situation existed only in Schools No. 2 and No. 7. A hungry child with no opportunity for food other than the simple, wholesome food provided by the school lunch program is the most receptive to unfamiliar food.

Hurried eating by younger children, necessary in order to make room for the next older group, resulted in comparatively few "clean plates" and empty milk glasses in School No. 2. It should be noted that this school was the only one in which an appreciably larger percentage of the older than of the younger consumed a whole glass of milk.

In those schools where influences were favorable, good acceptance continued throughout the experiment and in many cases improved (Table 1).

Evaporated milk was bought and served regularly by School No. 3 from the end of the experiment until the closing of school. The experience of School No. 1 resulted in plans to continue the use of evaporated milk in that school and to introduce it in all schools in the parish. The principals of three other schools included in this study stated that they planned to buy evaporated milk and have it served daily during the next school year.

From the results of this experiment, it is evident that reconstituted evaporated milk can readily be introduced in the school lunch program. Careful attention to the psychological influences involved will facilitate the acceptance of evaporated milk as well as other unfamiliar foods.

REFERENCES

(1) STARK, P. C.: Personal communication, 1947.
(2) HOLLINGER, M. E. AND ROBERTS, L. J.: Overcoming food dislikes: A study with evaporated milk. J. Home Econ. 21: 923, 1929.
(3) PRODUCTION AND MARKETING ADMINISTRATION, Reports on Pilot Milk Program. Washington: Dept. of Agriculture, March 31, 1947.

Army Announcements Concerning Personnel

The following Medical Department Dietitians were promoted during August, 1947:

Second Lieutenant to First Lieutenant

Lent, Jane E., R-2477
Nygard, Helen M. S., R-2478
Stephenson, Zelda J., R-2361
Storm, Eleanor, R-2476

The War Department has released the following official list of names of Medical Department Dietitians (not previously announced) who have been separated from service:

Captain

Anderson, Faye L., R-236, 45 Park Ave., Newport News, Va.

First Lieutenants

Fillingim, Doris E., R-146, Telogia, Fla.
Heimerl, Januaria G., R-2452, St. Nazianz, Wis.
Lundin, Helen F., R-571, 514 N. Prior Ave., St. Paul, Minn.
Molenaar, Margaret I., R-2393, R.F.D., Gilby, N. Dak.
Morrison, Caroline, R-2432, 248 Greenwood Ave., Bethel, Conn.
Schroeder, Mary J., R-2425, R.R. #2, Gibson City, Ill.
Stanford, Gwendolyn J., R-2320, R.F.D. #2, West Chester, Pa.
Stevenson, Carol M., R-2112, 207 N. York St., Oberlin, Kans.

Second Lieutenants

Cahill, Joyce M., R-2505, Turtle Lake, Wis.
Ford, Lillian R., R-2448, Rt. 2, Box 47, Enumclaw, Wis.
Gilmore, Adelaide A., R-2301, 432 Lyceum Ave., Roxboro, Pa.
Kiel, Frances H., R-2442, 120 Main St., Avon, Mass.
Noble, Ruth A., R-2492, 87 Grand Ave., Cranston 5, R.I.
Radebaugh, Phyllis R., R-1248, 2868 - 8950th West, Magna, Utah
Rugaard, Karen K., R-2471, 6502 Enright Ave., St. Louis, Mo.
Thyge, Avis H., R-2424, 125 E. 236th St., New York, N.Y.

First Lt. Evelyn M. Churchill, R-1083, previously reported as separated from the service, has been recalled to active duty.

A Nutrition Handicap Which Must Be Avoided

THE significance of breakfast as an important means of meeting the daily dietary allowances as suggested by the National Research Council was vividly demonstrated in a recent study.† This investigation revealed that subjects who skipped breakfast entirely or who ate a skimpy breakfast failed to receive their daily nutritional requirements in the other two meals of the day. Hence breakfast must be regarded not only as a meal which forestalls morning hunger and fatigue, but also one upon which the organism is closely dependent for its daily share of essential nutrients.

Virtually all nutritionists agree that breakfast should supply from one-fourth to one-third of the daily caloric and nutrient needs. A widely endorsed breakfast pattern, composed of fruit, cereal, milk, bread and butter, aids in organizing a well-rounded morning meal. The cereal serving—consisting of hot or ready-to-eat breakfast cereal, milk and sugar—is a universally recommended component of this breakfast. This serving contributes worth-while amounts of many essential nutrients, including biologically complete proteins, B-complex vitamins, and important minerals.

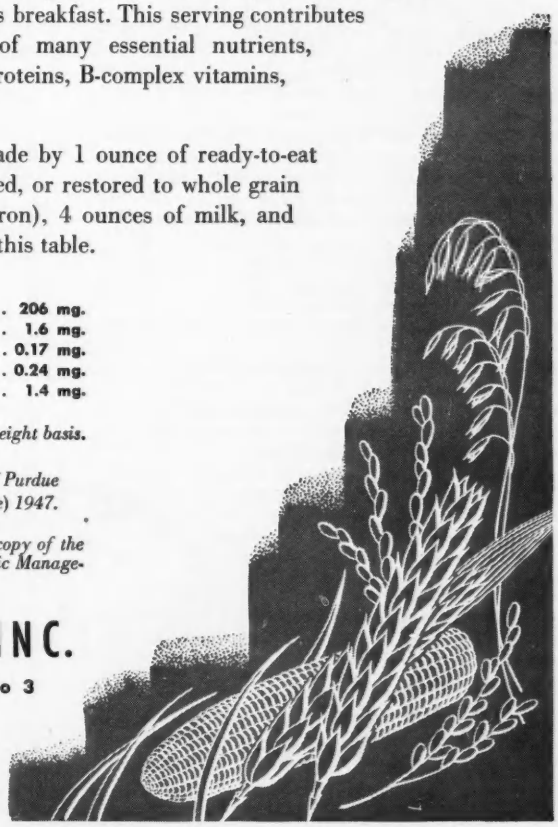
The quantitative contribution made by 1 ounce of ready-to-eat or hot cereal* (whole grain, enriched, or restored to whole grain values of thiamine, niacin and iron), 4 ounces of milk, and 1 teaspoonful of sugar is indicated by this table.

CALORIES.....	202	PHOSPHORUS....	206 mg.
PROTEIN.....	7.1 Gm.	IRON.....	1.6 mg.
FAT.....	5.0 Gm.	THIAMINE.....	0.17 mg.
CARBOHYDRATE .	33.0 Gm.	RIBOFLAVIN.....	0.24 mg.
CALCIUM.....	156 mg.	NIACIN.....	1.4 mg.

**Composite average of all breakfast cereals on dry weight basis.*

†*Jackson, P., and Schuck, C.: Dietary Habits of Purdue University Women, J. Home Econ. 39:344 (June) 1947.*

Dietitians are invited to send for a complimentary copy of the brochure "Cereals and Their Applicability in Dietetic Management" (D-1).



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Book Reviews

A Guide to the Selection and Training of Food Service Employees. By a Committee of the Food Administration Section of the American Dietetic Association. Minneapolis: Burgess Publishing Company, 1947. Pp. 47. Paper, spiral bound. Price $1.50.

The committee of dietitians who prepared this manual gives its objectives as follows: "To guide and assist dietitians and other food service administrators in developing a program to:

(a) Facilitate the selection of suitable employees.

(b) Raise the standards of food service and improve the efficiency of experienced employees.

(c) Provide a means of training inexperienced employees.

The content of the manual is concerned with preparation for a training program and the program itself. The former emphasizes the job analysis, job specification, and the selection of employees; the latter, methods of training, outlines for employee training, and evaluation of the program. Of particular interest are the concrete illustrations of job specifications for a variety of positions, such as counter workers, tray girl, and head cook. Sources for obtaining employees are discussed, and ways of interesting potential employees in applying for positions are suggested.

In times past little thought was given to the training of employees on the job. Now this aspect of the personnel program is considered of major importance. The manual includes some excellent suggestions for the possible procedures and content of training programs. The review of job instruction methods which is presented is the most up-to-date information on the subject, for it was developed by the War Manpower Commission for speeding up training in industry during the war. Illustrations of how to break the job down for teaching such units as cooking methods, food standards, and sanitation are particularly helpful. The reference lists, including visual aids, are up to date and inclusive of the best available sources.

In today's food service operations, whatever the type and wherever located, the problems of personnel management seem to be uppermost. If the dietitian can handle them successfully, other aspects of her responsibilities will move forward with a minimum of difficulty. Most of us feel keenly our limitations in this area and reach out eagerly for tools that will make the task easier. This manual will be a boon to any persons who are directing employees in a food service establishment. It provides an excellent reference for college students and for dietetic interns. There are all too few sources that deal so specifically with the personnel aspect of the food administrator's job.—*Katherine W. Harris, head, Department of Institution Management, New York State College of Home Economics, Cornell University, Ithaca.*

Manual of Applied Nutrition of The Johns Hopkins Hospital. 2nd ed. By Helen Baughman, Kathleen M. Lewis, and Eloise R. Trescher. Baltimore: Dietary Department, The Johns Hopkins Hospital, 1947. Cloth. Pp. 103. Price $1.50.

This is the second edition of the Johns Hopkins diet manual. The material has been compiled by the dietary department for the use of the visiting and house staff, nurses, dietitians, and medical students. Members of the staff of Johns Hopkins, representing all services, have approved the diets included and a special committee on nutrition has collaborated with the dietary staff in editing the material.

About the size of the "digest" type magazines, the book is printed on good quality paper in clear legible type and is well documented. The diets are presented in outline form and are very flexible. The therapeutic diets are modifications of the normal adequate diet. In the main, the diets have been analyzed for essential ingredients. If a diet fails to meet the accepted standards, its shortages are usually emphasized so that proper supplements can be administered. However, there is no mention of the inadequacy of the modified Sippy diet, nor is there sufficient emphasis placed upon the limitations of the low caloric diet. However, while every physician and dietitian will not be in complete agreement with each diet, the diet patterns can easily be adjusted to meet a specific requirement.

In addition to the diets, the manual includes a great deal of useful information, such as physiological data, nutritional allowances and recommended standards, standardized nourishment recipes, measurements and equivalents, and tables of food values of common foods. It would be gratifying, however, to find two diet manuals that were in agreement as to food measurement equivalents. More complete food tables, which include the mineral and vitamin content of food would make this book more practical.

Dietitians will find the book helpful, and although intended primarily for use at Johns Hopkins Hospital, it could well serve as a model for other diet manuals. The dietitians at Johns Hopkins should be justly proud of this splendid contribution.—*Martha Trulson, Veterans Administration, Chicago.*

Home Management in Theory and Practice. By Irma H. Gross and Elizabeth W. Crandall. New York: F. S. Crofts and Company, Inc., 1947. Cloth. Pp. 322. Price $2.80.

This book, by Irma Gross, Michigan State College, and Elizabeth Crandall, Rhode Island State College, is an outgrowth of an earlier text by the same authors titled *Home Management with Special Reference to the College Home Management House.* The new book goes farther than the earlier one in the presentation of the family resources and goals by showing them in relation to the processes of management.

The book is organized around the three steps in the managerial process: (a) planning, (b) control or execution of the plan, and (c) evaluation. Part I is devoted to the approach to home management through a discussion of its theory, development, and goals. Part II is a discussion of the process of management as applied to the home and is divided into chapters which deal with planning, control of resources, guidance of workers, work simplification, and evaluation.

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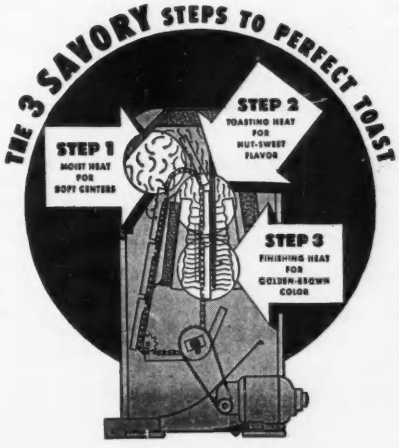
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Each chapter is followed by suggested experiences, either for group discussions or activities for groups or individuals. Thus the book is particularly valuable for all students of home management—not only those college students living in a home management house, but for other college students, adult groups studying homemaking, and the individual homemaker who may be seeking help in the solving of some of her problems.

Throughout the book, the place and problems of food management are woven into the problem of total home management. For instance, in the chapter on planning, the importance of giving consideration to the elements of food cost, preparation time, nutrition, and marketing conditions, is stressed. And in the discussion on work simplification and the control of output, the principles of motion and time study and energy output are applied to several typical jobs in food preparation as well as to other household tasks.

Methods of Vitamin Assay. By The Association of Vitamin Chemists, Inc. New York: Interscience Publishers, Inc., 1947. Cloth. Pp. 189. Price $3.50.

The methods presented in this volume are the result of the pooling and interchange of information on assay techniques by members of the Association of Vitamin Chemists and a number of scientists outside of the Association. Although many of the procedures given are not essentially different from accepted methods printed elsewhere, many details and explanatory notes have been included, thus making this manual usable to laboratory technicians with a somewhat limited background in quantitative analysis as well as of value to research workers.

The scope of the book is limited in that detailed procedures are given only for vitamin A, carotene, thiamine, riboflavin, niacin, and ascorbic acid. Methods of assay for other vitamins are referred to by reference only.

The chapter on sampling for vitamin assay effectively points out the magnitude of error which may occur if proper sampling procedures are not used. Sampling methods for many general types of products are also presented.—*Dorothy Ann Ehmke, Research Laboratory of Human Nutrition, University of Alabama, Tuscaloosa.*

The Pocket Book of Baby and Child Care. By Benjamin Spock, M.D. New York: Pocket Books, Inc., 1946. Paper. Pp. 517. Price 25 cents.

This fourth printing, the press run for which was 400,000, brings to 748,000 copies the total number of 25-cent editions of this excellent and practical book on child care which won the 20th Annual *Parents' Magazine* Award. In its hard-bound form, this book is titled *The Common Sense Book of Baby and Child Care* and was published by Duell, Sloan, and Pearce. It was reviewed in an editorial in the October, 1946, issue of the JOURNAL.

The sections on diets were checked by Betty N. Richmond, an A.D.A. member in charge of the Nutrition Clinic at the New York Hospital, and present the problems clearly in easy-to-understand language. Written for the layman, this book is obtainable anywhere that 25-cent books are sold, and can be highly recommended by the dietitian or nutritionist.

Concise Chemical and Technical Dictionary. By H. Bennett. Brooklyn: Chemical Publishing Company, Inc., 1947. Cloth. Pp. 1055. Price $10.

This dictionary contains some 50,000 definitions. Almost every field of science is represented, although the greatest number of definitions are in the fields of chemistry and engineering and their counterparts in industry. Added features of the dictionary are the brief presentation of nomenclature of organic chemistry, names and formulas of radicals occurring in organic compounds, and semi-structural formulas of important organic ring systems.

In the addenda are listed the newest trade names and definitions of additional technical terms.—*Dorothy Ann Ehmke, Research Laboratory of Human Nutrition, University of Alabama, Tuscaloosa.*

Mongolism and Cretinism. By Clemens E. Benda, M.D. New York: Grune & Stratton, 1946. Cloth. Pp. 310. Price $6.50.

Written by the director of the Wallace Research Laboratory for the Study of Mental Deficiency, Wrentham, Massachusetts, this book may be of service to the dietitian as a reference work to supply background information concerning clinical manifestations and general pathology of pituitary and thyroid deficiency. It is well illustrated and documented with tables.

Practical Physiological Chemistry. 12th ed. By Philip B. Hawk, Ph.D., Bernard L. Oser, Ph.D., and William H. Summerson, Ph.D. Philadelphia: The Blakiston Company, 1947. Cloth. Pp. 1323. Price $10.

The new edition of this standard text presents some chapters which have been entirely rewritten and others which have been re-examined and revised to insure their present-day application. In revising, the authors have tried to strengthen the clinical and theoretical phases particularly. Special attention has been given to the presentation of modern concepts of protein structure and enzyme action, intermediary metabolism, newly discovered vitamins, anti-vitamins, and antibiotics.

The American Illustrated Medical Dictionary. 21st ed. By W. A. Newman Dorland, M.D. Philadelphia: W. B. Saunders Company, 1947. Cloth. Pp. 1660. Price $8 without thumb index, $8.50 with thumb index.

New terms now incorporated in medical terminology as a result of the research conducted during the war years have been included in this latest edition of Dorland's dictionary. Besides the field of actual war medicine and surgery, the additions cover the fields of tropical medicine; aviation medicine; medical zoology and mycology; biochemistry and pharmacology, with antibiotics, enzymes, vitamins, and endocrines; and physics and nucleonics, including the medical applications of radioactive isotopes of the chemical elements. *It is to be regretted that definition of dietetic terms have not been brought up to date.*

Vitamin A and Tuberculosis

A relation between lack of vitamin A and susceptibility to tuberculosis in rats and mice has been reported by Drs. A. B. McCoord, C. P. Katsampes, E. Day, and S. W. Clausen of the School of Medicine, University of Rochester. When there is a deficiency of vitamin A, the bronchi are broader and more irregular in outline than they ordinarily are.—*New York Times, June 15, 1947.*

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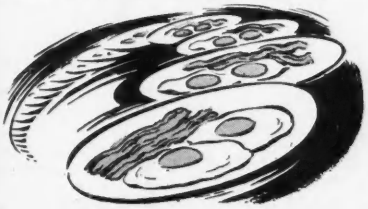

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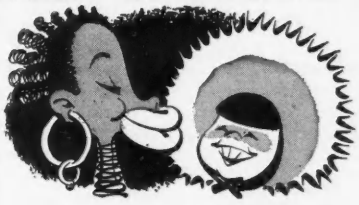

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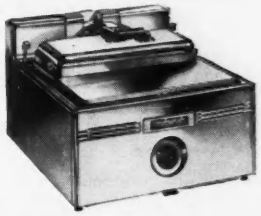

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Current Literature

Contributed by Janette C. Carlsen, Janet E. Engebretsen, and Ethel M. Miller, Dietary Department, The Johns Hopkins Hospital; Marian T. Straube, University of Chicago Clinics; Martha Trulson, Veterans Administration, Chicago; and the Journal staff.

AMERICAN JOURNAL OF THE DISEASES OF CHILDREN

Vol. 74, July, 1947

*Secondary pancreatitis. P. V. Véghelyi.—p. 45.

Pancreatitis. Secondary pancreatitis is far from being an uncommon disease or involvement of certain diseases. In acute stages, it is doubtful that any treatment is helpful although it is thought that blood transfusions, penicillin, some hormone serums, and arsenic are beneficial. After hormone deficiencies develop, large doses of pancreatic extract and an almost fat-free diet are required. Interestingly enough the patients automatically place themselves on a fat-free diet as they are unable to tolerate free fat. Parenteral administration of vitamins A, D, and K is of extreme importance. Of the therapeutic aids none give permanent relief, but all help to keep the condition of the patient stable.

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES

Vol. 214, August, 1947

*Effect of thyroid hormone in tissue respiration. R. H. Williams and J. L. Whittenberger.—p. 193.

Thyroid Effect. Hyperthyroidism is still in the state of obscurity as far as etiology is concerned, although there is agreement on the hypothesis of its relationship to oxidative processes. Studies were made on rats, guinea pigs, and patients to determine the effect of thyroglobulin, thyroxin, and thyrotropin on oxygen consumption of tissues; also, the effect of common respiratory enzymes on normal and hyperthyroid animals was investigated. Neither thyroxin nor thyrotropin caused much change in oxygen consumption, but there was an increase when tissues were incubated with thyroglobin.

THE AMERICAN JOURNAL OF PHYSIOLOGY

Vol. 150, August, 1947

*Blood sugar levels and the behavior pattern of young healthy adults several hours after the ingestion of large amounts of sucrose. J. Haldi and W. Wynn.—p. 263.

*The effect of environmental temperature on food selection. S. Donhoffer and J. Vonotzky.—p. 329.

*The effect of thyroxine on food intake and selection. S. Donhoffer and J. Vonotzky.—p. 334.

Blood Sugar Levels. A study of the blood sugar concentration and the behavioral response of forty-four healthy young adults failed to reveal any evidence of the so-called hypoglycemic syndrome during a 4-hr. period following the ingestion of 1.5 gm. of sucrose or dextrose per kilogram of body weight. The blood sugar concentration rose with equal rapidity after the ingestion of sucrose and of dextrose. These experiments offer confirmatory evidence for the conclusion drawn from previous studies that the hypoglycemic syndrome is not the usual response of normal healthy adults to a high-carbohydrate intake.

Environmental Temperature and Food Selection. Data have been presented which demonstrate that animals select and adapt their food intake with considerable accuracy according to their needs. These experiments were devised to investigate whether the self-selected amount of energy-producing foodstuffs—carbohydrate, protein, and fat—could be altered by a change in environmental temperature. The mice used in this study were allowed the choice of three food mixtures. Each contained one third part of a standard mixture and two thirds of either starch, casein, or lard. Water was supplied *ad libitum*. The observations showed that food consumption increased at low (10° to 11° C.) and decreased at high (29° to 33° C.) external temperatures. These changes were due almost entirely to an increase or decrease in the intake of carbohydrate-rich food. The authors suggest that changes of thyroid function may play a role in qualitative regulation of food intake.

Thyroxin and Food Selection. Prolonged administration of thyroxin considerably increased the food intake of white mice given diets described in the article reported above. The increase in food intake followed the rise of oxygen consumption after a lag of some days and persisted for a similar period after the fall in the rate of metabolism. The additional calories ingested during the time when the effects of thyroxin were apparent were furnished by consumption of starchy food. At the height of this thyroxin reaction, starches often provided 80 per cent of the calories, while in untreated animals fat-rich foods furnished 70 to 80 per cent of the calories.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 37, August, 1947

Report of the committee on shellfish. M. H. Bidwell.—p. 983.
*Cheese and its relation to disease. F. W. Fabian.—p. 987.

Cheese and Disease. Certain dairy products, such as cheese, ice cream, and butter, have not received adequate attention in regard to sanitary safeguards. A number of epidemics have been traced to cheese within recent years and, as a result, public health officials are realizing the need of sanitary regulation governing its manufacture and sale. It has been found that the cheese causing epidemics has been made from raw milk or cream and that it has been sold too quickly after being manufactured. Although cheese makers have resisted pasteurization because the technique is different from that employed in making cheese from raw

Preventing Butter Deterioration in The Home

Butter is a highly perishable food. Its delicate quality is quickly affected by many different factors, including light, heat, loss of moisture and contaminating odors.

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To keep butter at peak deliciousness, it should be kept tightly wrapped and in the paraffined carton when not in actual use on the table. This is important especially when the butter is in the refrigerator. It is easily done and the reward for the homemaker is added mealtime enjoyment for her family.

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milk, a new precision or "clock" method using pasteurized milk has been developed. Cheese made by this method is not only safer but also more uniform in flavor. At the present time only seven states and one city require that cheese be made from pasteurized milk or cream, or be aged from 60 to 120 days in lieu of pasteurization.

ANALYTICAL CHEMISTRY

Vol. 19, August, 1947

*Carotenoids of stored dehydrated carrots. G. Mackinney and W. E. Fratzke.—p. 614.

Carotenoids of Dehydrated Carrots. The carrot contains a number of carotenoids in minor proportions, in addition to alpha- and beta-carotenes. There is a question as to whether the relative abundance of these carotenoid pigments in dehydrated carrots, change significantly on storage. Information on such changes is necessary in order to assess the effect of a given processing method. Up to the present time there have been no adequate methods for accurately determining these carotenoids. The procedure described in this paper gives a critical analysis of spectrophotometric data. The results indicate that there are no major changes in the proportions of cis-trans isomers on storage. It seems, then, that the effectiveness of a given processing treatment can be adequately assessed by measurements on crude extracts.

ARCHIVES OF INTERNAL MEDICINE

Vol. 80, July, 1947

*Effect of amino acids on the function of the muscles of patients with myasthenia gravis. C. Torda and H. G. Wolff.—p. 68.

Myasthenia Gravis. The effect of amino acids on five patients with myasthenia gravis was studied. When a protein hydrolysate was administered to the subjects, there was an improvement in muscle function and muscle action potential. It is possible that the improvement noted is referable to increased acetylcholine synthesis due to the administration of amino acids. No therapeutic implications can be justified from these preliminary findings, but they warrant research.

ARCHIVES OF PEDIATRICS

Vol. 64, July, 1947

*Paralytic shell-fish disease and poliomyelitis. R. R. Scobey.—p. 350.

Vol. 64, August, 1947

*A three year review of statistics for milk substitutes in the treatment of infantile eczema. L. Z. Wolpe.—p. 399.

Paralytic Shellfish Disease. This disease is an acute poisoning resulting from the ingestion of poisonous mussels. The changes which occur in the nerve cells are said to be identical with those observed in cases of poliomyelitis. The author gives the history of the outbreaks of this disease in the U. S. and observes that it occurs only in the summer months, between May and October. Symptoms of poisoning are of three types: (a) gastro-intestinal, (b) nervous or allergic, and (c) paralytic. Death occurs, as in the case of poliomyelitis, from respiratory paralysis. An analysis of several case histories indicated that poisoning was independent of the amount of mussels consumed, and cooked mussels were just as potent as raw ones. When the shellfish were taken on an empty stomach, the intoxication rate was very high. Data are presented which suggest that paralytic shellfish disease and poliomyelitis are identical disease entities arising from the same etiological factor, hydrocyanic acid.

Milk Substitutes and Infantile Eczema. Many milk substitutes have been developed for the treatment of milk allergy. Nine of these substitutes were used in a study made in the eczema ward at the Los Angeles County Hospital. A comparison was made of the progress of a group of babies fed milk and given routine eczema therapy and of another group of babies fed milk substitutes and given the same therapy. The children receiving the milk substitutes reached clinical relief faster than those fed on a milk dietary, but their gain in weight was not so great. The statistical review suggests, however, that there is no marked advantage for either the milk or milk substitute dietary on the basis of weight gained or lost or height gained.

THE BRITISH MEDICAL JOURNAL

No. 4517, August 2, 1947

*Anomalous manifestations of malnutrition in Japanese prison camps. R. G. S. Whitfield.—p. 164.

Malnutrition in Japanese Prison Camps. Conditions arising as a result of malnutrition often differ widely from descriptions in textbooks. This observation was made by the author in eight Japanese prison camps. On a diet of polished white rice, pantothenic acid deficiency with an accompanying peripheral neuritis was the chief trouble. On a barley and bean diet, cardiac beriberi occurred with some pantothenic acid deficiency and a slightly different neuritis. At no time was a typical case of dry beriberi seen. A series of four cases of epileptiform seizures of unknown causation is described.

CANADIAN JOURNAL OF PUBLIC HEALTH

Vol. 38, July, 1947

*The ascorbic acid content of some foods commonly used in Canada. H. D. Branion, J. S. Roberts, R. T. Allman, L. W. Billingsley, and H. E. Woodward.—p. 330.

Ascorbic Acid Content of Foods. The average ascorbic acid content of some fruits and vegetables commonly used in Canada is summarized. Emphasis is placed on vegetables, such as cabbage, turnips, and potatoes, since they are less expensive sources of the vitamin. A chart is included which lists the seasonal variation in the ascorbic acid content of these cheaper vegetables.

THE CANADIAN MEDICAL ASSOCIATION JOURNAL

Vol. 57, July, 1947

*The effect of amino acids on gastric acidity. J. Feller and C. J. Tidmarsh.—p. 23.

Amino Acids and Gastric Acidity. To determine the true picture of the amino acid effect on gastric acidity, the acid curve following a regular test meal was determined. A day or two after this test was made, another was performed and a dose of amino acid was given by mouth. It was found that repeated small doses of amino acids were comparatively ineffectual in reducing gastric acidity and caused high rebound acidity. Single large doses (50 mg.) produced a prolonged (1½ hr.) reduction of acidity to zero, but also a high secondary response. Thus, these results further confirmed Co Tui's findings that repeated large doses of amino acids are necessary if gastric acidity is to be reduced.

INDUSTRIAL AND ENGINEERING CHEMISTRY

Vol. 39, August, 1947

*Effect of commercial canning operations on the ascorbic acid, thiamine, riboflavin, and niacin contents of vegetables. J. R. Wagner, F. M. Strong, and C. A. Elvehjem.—p. 985.

"A feast for a king," Robin called it

Great oaks still stand in Sherwood Forest. They link us with a past which is half legend, all romance.

Under those oaks Robin Hood and his stout yeomen flung themselves down to laugh and rest after forays. With appetites born of adventure, the band relaxed and turned to a hearty meal. Loaves of crusty brown bread . . . and fair yellow *cheese.*

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*Effects of blanching on the retention of ascorbic acid, thiamine, and niacin in vegetables. J. R. Wagner, F. M. Strong, and C. A. Elvehjem.—p. 990.
*Effect of time and temperature of storage on vitamin content of commercially canned fruits and fruit juices (stored 12 months). D. S. Moschette, W. F. Hinman, and E. G. Halliday.—p. 994.
Effect of duration and temperature of blanch on vitamin retention by certain vegetables. N. B. Guerrant, M. G. Vavich, O. B. Fardig, H. A. Ellenberger, R. M. Stern, and N. H. Coonen.—p. 1000.
*Effect of duration and temperature of blanch on proximate and mineral composition of certain vegetables. A. Kramer and M. H. Smith.—p. 1007.
Effect of dry heat on proteins. D. K. Mecham and H. S. Olcott.—p. 1023.

Vol. 39, September, 1947

l-malic acid as by-product in apple sirup manufactured by ion exchange. R. E. Buck and H. H. Mottern.—p. 1087.
*Industrial aspects of browning reaction. H. M. Barnes and C. W. Kaufman.—p. 1167.
Vegetable oil concentrates as antioxidants for vitamin A in fish liver oils. L. O. Buxton.—p. 1171.

Vitamin Content of Canned Vegetables. Information concerning the effects of commercial operations on the nutritional quality of processed foods is still quite limited. In order to obtain more complete data, an investigation was made to study further the retention of water-soluble vitamins—ascorbic acid, thiamine, riboflavin, and niacin—in commercially canned vegetables. Except for niacin, each of these vitamins has a characteristic weakness to conditions encountered in canning operations. Ascorbic acid is sensitive to oxidation, thiamine to high temperatures, and riboflavin to light. A comparison of the retentions of the four vitamins after each operation should give some indication as to the relative influence of each of these conditions. The conclusions made from this study are as follows: (a) In the preparation of asparagus, peas, green beans, and Lima beans the blanching operation had an adverse effect on the retention of water-soluble vitamins. (b) Retention was affected by the size, maturity, and grade of the raw products, the characteristics of different products, and differences in blanching procedures. (c) The highest retentions of ascorbic acid, thiamine, and riboflavin occurred in asparagus. (d) The processing operation resulted in the destruction of additional amounts of thiamine. (e) Values for overall retentions were 39 to 121 per cent for ascorbic acid, 31 to 88 per cent for thiamine, 63 to 106 per cent for riboflavin, and 77 to 100 per cent for niacin.

Effects of Blanching on Vitamin Retention. Peas, green beans, and Lima beans were used in a study to determine the effect of variations in blanching conditions on the retention of the water-soluble vitamins—ascorbic acid, thiamine, and niacin. The major considerations were the effects of variations in blanching times and temperatures and in size or grade of the raw products. It was shown that short-time blanching carried on at high temperatures usually permitted a better retention than did long-time blanching at either high or low temperatures.

Effect of Storage on Vitamin Content of Canned Foods. The unstable character of several of the vitamins suggests the possibility of appreciable losses during storage. More information is needed as to the effect of time and temperature on these nutrients. This paper presents the results obtained on the ascorbic acid, carotene, niacin, riboflavin, and thiamine content of seventeen lots of canned fruits and fruit juices which were stored for one year at 50°, 65°, and 80° F. The canned foods held under constant temperature conditions at 50° F. showed no significant losses in ascorbic acid, thiamine, or carotene. Tomatoes showed a significant loss in niacin after eight months of storage, regardless of the temperature. For the most part, storage at 65° F. also resulted in good retention of the vitamins studied, but storage at 80° F. resulted in definite losses in ascorbic acid and thiamine after eight months.

Comparisons were also made of the effect of one year's storage on the ascorbic acid and thiamine content of tomatoes and orange juice held in nine warehouses in different localities. The retention of these vitamins decreased as the yearly average temperature increased. For instance, the retention of ascorbic acid varied from 78 per cent at New Orleans' average temperature of 77° F. to 100 per cent at New York's average temperature of 58° F.

Effect of Blanching on Proximate and Mineral Composition. Peas, green beans, Lima beans, and spinach were the vegetables used in this investigation. Steam blanching caused no significant change in the composition of peas, green beans, or Lima beans. In the case of spinach, however, there was a moderate loss of carbohydrate, ash, and phosphorus, and a slight gain in calcium content. When water blanching was used, it seemed that the effect of time was more important than temperature. Carbohydrate losses were the greatest in spinach, as were the mineral losses.

Browning Reaction. The Maillard or browning reaction has taken on importance in the food industry since the war years as it is known to be responsible for many of the deteriorative changes that take place in our food products. This reaction, which is attributed to a reaction between reducing sugars and proteins or other amino bodies, was first recognized in the sugar, beer, malting, and milk industries. Its deteriorative effects have more recently been demonstrated in dried eggs, molasses, dehydrated vegetables, dried fruit, dried juices, breakfast cereal, coconut, soups, and dried fish and meats. It is, no doubt, a factor in the crumb color of breads and cakes and may be responsible for off colors in canned goods during processing. Experiments have shown that the browning reaction can be controlled by the use of sulphur dioxide in reasonable quantities. However, this control procedure is not considered desirable. The reaction is now assuming added industrial implication in that it can be used to develop flavor characteristics common to many of our food products.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 134, August 16, 1947

*Potassium deficiency in diabetic acidosis. W. M. Nicholson and W. S. Branning.—p. 1292.

Vol. 134, August 23, 1947

*The mechanism of amphetamine-induced loss of weight. S. C. Harris, A. C. Ivy, and L. M. Searle.—p. 1468.
*Control of vitamin D in milk. Current Comment.—p. 1486.

Vol. 134, August 30, 1947

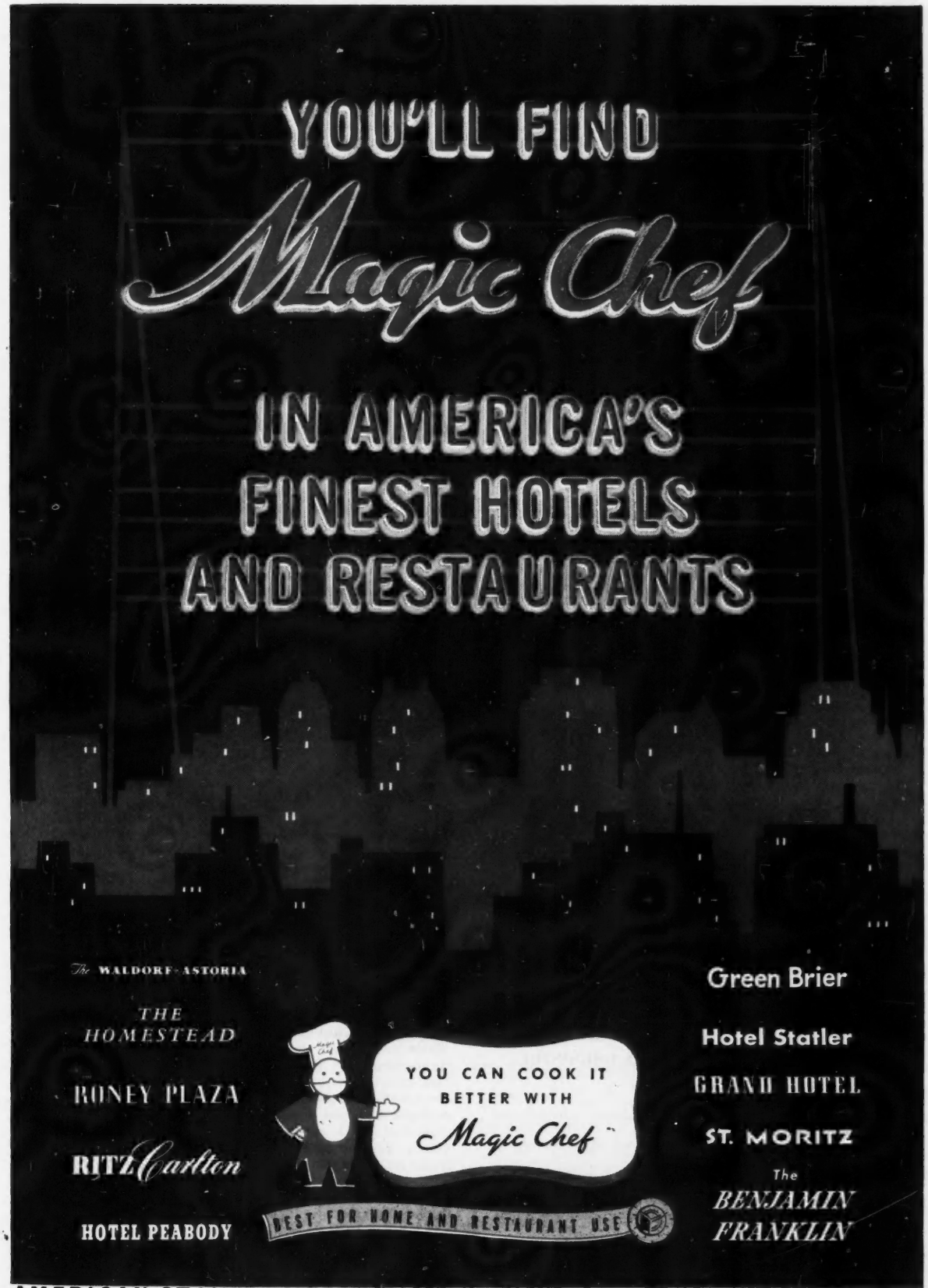
*Carbohydrate metabolism in osteitis deformans, or Paget's disease. R. C. Moehlig and H. L. Abbott.—p. 1521.
*Antivitamin activity of related compounds. Current Comment.—p. 1550.

Vol. 135, September 6, 1947

*The surgical significance of hemoglobin deficiency in protein depletion. C. Lyons and H. S. Mayerson.—p. 9.

Potassium Deficiency. There is evidence that the therapy in diabetic acidosis is unsatisfactory. This paper gives a report of two cases of diabetic acidosis which were associated with a decrease in serum potassium concentration. The authors believe that a potassium deficiency is one of the factors responsible for the high mortality rate in the cases of diabetic acidosis.

Loss of Weight. Although it has been reported that amphetamine ("benzedrine") is of value in the management of obesity, it has not been demonstrated that the drug actually causes a reduction of body weight. Therefore, a number of experiments were performed on both human and



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canine subjects. The results indicated that the loss in weight is due primarily to a reduction in food intake. The drug seems to produce anorexia by acting on an appetite mechanism in the cerebrum, or on a hunger mechanism at a lower level (hypothalmus), or both. No evidences of deleterious effects of the drug have been observed.

Vitamin D. A large number of dairies sell bottled fresh milk fortified with vitamin D. The Council on Foods and Nutrition of the American Medical Association requires that this milk contain 400 International Units of vitamin D per quart. However, unless state, municipal, or Council regulations require periodic check-ups, no control over the potency of the vitamin in milk can be maintained. So far only a few cities and only five states make provisions for testing milk biologically.

Carbohydrate Metabolism. Evidence supporting the view that carbohydrate metabolism is disturbed in Paget's disease is presented. It is reported that there is a lowered dextrose tolerance in this disease. In many cases there is also a high familial incidence of diabetes mellitus, as well as of obesity and tallness. It is further noted that diseases which involve carbohydrate metabolism, such as diabetes, acromegaly, and pituitary basophilism, also produce changes in calcium metabolism with accompanying changes in the bones. It is hoped that further work will lead to a determination of the true etiologic basis of Paget's disease.

Anti-Vitamin Activity. There are certain chemical compounds closely related to the various vitamins which have "anti-vitamin" activity. One example is pyrithiamine, the anti-vitamin for thiamine. When this substance is administered orally to mice or rats, the symptoms of thiamine deficiency appear; administration of a sufficient amount of thiamine will completely nullify the effect. The same type of reaction has been noted following the administration of certain analogues of riboflavin, pantothenic acid, pyridoxine, biotin, pteroylglutamic acid, ascorbic acid, and niacin. Antagonistic chemical analogues have been found, not only for vitamins, but also for a number of the amino acids, several purines, porphyrins, and two hormones. Although the mode of action of anti-vitamins has not been demonstrated, it is thought that the vitamins and other substances for which "anti-analogues" have been found normally combine with a specific part of a protein to form the metabolically active compound. If the vitamin should be displaced from the protein by its analogue, which cannot carry on its metabolic function, the resultant functional failure would be just as though the vitamin were entirely lacking from the diet.

Hemoglobin Deficiency. Many patients chronically ill with infections, malignant tumors, peptic ulceration, or malnutrition show symptoms of protein deficiency. Of the blood proteins, hemoglobin is most significantly reduced. Studies made during the war, and more recently, have emphasized that a deficiency of hemoglobin is of particular surgical significance. Correction of hemoglobin deficits by blood transfusions rather than by dietary measures seem to be mandatory in the depleted patient. Special attention to dietary intake of food protein should be reserved for the period following surgical treatment.

THE JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 169, August, 1947

*Tocopherols (vitamin E) in milk: their chemical determination and occurrence in human milk. M. L. Quaife.—p. 513.

*Studies in fetal metabolism. W. H. Goldwater and deW. Stetten, Jr.—p. 723.

Tocopherols in Milk. A simple method for the determination of vitamin E in milk is given. Human milk samples (fifteen in all) which were obtained during the first week after parturition showed values of 0.13 to 3.6 mg. per 100 cc. of milk. The majority were much richer in vitamin E than those obtained from mothers in the first to eighth month of lactation.

Fetal Metabolism. A subject of controversy is the origin of the constituents of the mammalian fetus. There is definite proof for the synthesis of fatty acids and cholesterol in the chick embryo, but similar evidence in the mammalian fetus is lacking. In this study the synthesis by the fetus of fatty acids, of cholesterol, and of glycogen were investigated. Female albino rats were used. Results indicated that fetal glycogen, fatty acids, and cholesterol are synthesized in the fetal organism.

THE JOURNAL OF NUTRITION

Vol. 34, August, 1947

*Diet of mother and brain hemorrhages in infant rats. E. E. Brown, J. F. Fudge, and L. R. Richardson.—p. 141.

*Availability of carotene from carrots and further observations on human requirements for vitamin A and carotene. E. C. Callison and E. Orent-Keiles.—p. 153.

*Metabolism of women during the reproductive cycle. XIII. The utilization of niacin during lactation. M. Coryell, C. Roderuck, M. E. Harris, S. Miller, M. M. Rutledge, H. H. Williams, and I. G. Macy.—p. 219.

Brain Hemorrhages in Infant Rats. The relation of the diet of the mother to abnormalities in the offspring is reported in this paper. Female rats were reared to maturity on synthetic diets in which the only variable constituents were vitamin K and lard. When lard was removed from the diet and the females allowed to bear litters, a high incidence of brain hemorrhages occurred in the offspring. Hemorrhages did not occur when the diet contained either lard or vitamin K. Most of the young that died with brain hemorrhages were either born dead or died within 24 hr. after birth. The whole blood coagulation time of females which produced hemorrhagic young was normal. It is suggested that some substance which acts normally to maintain capillary strength is not synthesized by the body when the diet is low in fat and deficient in vitamin K.

Carotene from Carrots. Carrots have the highest carotene content of any food commonly eaten by man, and they are consumed in large quantities. Nevertheless, there is evidence that the ability of the human body to absorb and utilize the large amounts of carotene present in carrots is very limited. In this study four young adults were placed on a basal diet deficient in vitamin A but adequate in all other respects, for a period of seven months to one year. When dark adaptation tests indicated that the visual threshold had increased to a value of 0.5 to 0.7 log unit above the subject's normal average threshold, the daily inclusion in the diet of carrots was begun. It was found that 75 per cent of the carotene from carrots was eliminated in the feces, leaving 25 per cent available to the body. The results of this study emphasize the need for caution when making use of carotene and vitamin A values found in current food composition tables.

Niacin Utilization During Lactation. It has been found that niacin and choline are necessary for successful lactation in the hamster, but the possibility of a relationship between niacin metabolism and lactation in women during the reproductive cycle has not been studied to any extent. In this experiment the niacin intake during a 24-hr. period, the secretions of milk, and the excretions of urine by healthy mothers who were successfully nursing their infants were observed. With an average daily intake of 16.5 mg. of niacin, the average secretion in milk per 24 hr. increased from 0.04 mg. niacin on the first day postpartum to 2.95 mg. on the tenth day. Niacin in the urine varied from day to day for the individual women, but each subject seemed to have a characteristic level of excretion. During the puer-

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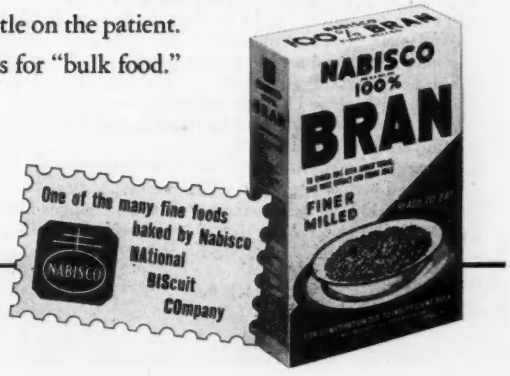

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perium neither secretion in milk nor excretion in urine showed relationship with intake. Furthermore, there was no relationship between the daily amounts of niacin in urine and the volumes of urine or milk, or the quantity of the vitamin in the milk.

THE JOURNAL OF PEDIATRICS

Vol. 31, August, 1947

*The determination of status and progress in children with nutritive failure. A. W. Mann, S. Dreizen, and T. D. Spies.—p. 161.
Self-demand feeding and indulgence in early infancy. G. F. Weinfeld.—p. 203.

Determining Status and Progress in Nutritive Failure. Medical, dietary, and Wetzel Grid findings in children without symptoms of nutritional deficiency diseases and in children with signs and symptoms suggestive of nutritive failure were compared for a two-year period. No therapy was given during this period. The analysis of physical status by the Wetzel technique paralleled the medical and dietary observations. It was apparent that the retardation shown by the children in the test group was due to dietary inadequacies.

NEW YORK STATE JOURNAL OF MEDICINE

Vol. 47, August 15, 1947

*Nutrition and child health. R. R. Scobey.—p. 1786.

Nutrition and Child Health. There is great need for scientific nutritional studies and a nutritional program to compensate for the inadequacies in the home dietary. The clinical observations made by the author clearly support this statement. In addition to reviewing the effects of poor diet on physical well-being, Dr. Scobey gives an account of nutritional studies made on school children having ringworm infection. It was apparent that the nutritional status influenced the susceptibility and rate of healing in ringworm infection. When more attention is given to a nutritional program that will provide a completely adequate diet for the school child, we will have healthier children as well as children better equipped mentally to meet the future.

NUTRITION REVIEWS

Vol. 5, August, 1947

*How and why a better use of food. H. C. Sherman.—p. 225.
Present knowledge of riboflavin in nutrition.—p. 227.
*Relationship of gastric acidity to thiamine deficiency in the aged.—p. 229.
Relation of inheritance to nutritional requirement.—p. 237.
*Effect of diet on stability of body fat.—p. 243.

Vol. 5, September, 1947

*What progress in nutrition. R. R. Williams.—p. 257.
Present knowledge of fat in nutrition.—p. 258.

Better Use of Food. If people are to be persuaded to change their food habits, they must be made to feel that they are participating in a program that is to their own advantage. Improvement in food habits is reflected in consumer demand and in public support of the nutritional guidance efforts of governmental and educational agencies. Food habits in the U. S. have already been improved. Statistics taken from a U. S. Department of Agriculture publication show that between 1915 and 1945 our national yearly per capita consumption of milk increased 52 per cent; of green and yellow vegetables, 79 per cent; of citrus fruits and tomatoes, 133 per cent. However, more changes need to be made if the goals formulated by the National Nutrition Conference in 1941, are to be reached.

All of the people of the U. S. would receive adequate dietaries if our national food crops were equitably distributed. The readjustment of food habits that is involved in this problem has both educational and economic aspects. However, if the problem of food distribution could be solved, the following far-reaching potentialities could be achieved: (a) The increased prominence that would be given to fruits, vegetables, and milk would improve nutritional status and tend to moderate the demands upon meat, fat, and sugar supplies. Thus, a more equitable distribution of these latter foods among the peoples of the world would be economically feasible. (b) If the moderately high income people would moderate their market demands for highly grain-fed meats, a more substantial share of grain could be turned to increased production of bread and milk. (c) There would be a great gain to goodwill and the sense of social justice.

Gastric Acidity and Thiamine Deficiency. There is conflicting data concerning the effect of thiamine deficiency upon the gastric secretion. Several reports suggest that thiamine deficiency suppresses the gastric secretion. A recent experiment in which thirty-one persons between the ages of sixty-five and eighty-one years participated, indicated that there was no significant correlation between gastric anacidity or hyposecretion and urinary thiamine excretion. It is probable that impairment or inhibition of gastric secretion is the result of thiamine deficiency only when the deficiency is severe.

Stability of Body Fat. It has been suggested that diet might affect the antioxidant content of body fat. From studies made on young albino rats, hogs, and cows, it appears that the keeping quality of food fats is influenced by the diet of the animal from which they are derived. This factor must receive attention in food marketing.

Progress in Nutrition. There has been conspicuous progress in the science of nutrition, and the advances in diagnosis and therapy of nutritional disease have been notable. However, the influence of the physician is somewhat limited. The vast field of human feeding is mainly in the hands of industry and of the housewife. To what extent is the science of nutrition being applied to human feeding by these sources? On the whole, the food industry is alert to the possibilities of popularizing its products through use of scientific knowledge, and the housewife has become more nutrition conscious as a result of the experiences of war years. Unfortunately, however, the methods of both industry and of popular education seem to take effect most readily in spots of less acute need. It is the less well-informed, the isolated and remote family which learns most slowly and avails itself least of technologic advances. Government and charity are continually trying to overcome this problem by conducting classes for housewives. The school lunch has been effective, too. Compulsory enrichment or suitable fortification of cheap staple foods offers a partial remedy, but legislation requires the endorsement of strong public opinion before it can be adopted or enforced. In regard to the value of synthetic vitamins, the results must still be appraised inferentially. Every measure of mass nutritional betterment should be examined, then applied conscientiously, and the verdict left to be rendered in the future.

PUBLIC HEALTH NURSING

Vol. 39, September, 1947

*Suggestions for teaching nutrition to families. E. M. Bigelow and E. M. Shapcott.—p. 436.

Teaching Nutrition. The authors of this paper, both A. D. A. members, present helpful suggestions to be used by nurses in teaching nutrition to families. Outlines and

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charts from a *Guide for Teaching Nutrition*, which has been prepared jointly by the Visiting Nurse Association of Brooklyn and the Visiting Nurse Society of Philadelphia, are given. They have proved to be very helpful to the nurses using them and can be used by others teaching nutrition in a home situation. Some of the points given in the guide have been of special value. They include the following: (a) leads for finding what people eat, (b) presentation of material, (c) organization and planning of teaching, (d) follow-up and recording, (e) appraisal of the family situation, and (f) learning the financial situation.

PUBLIC HEALTH REPORTS

Vol. 62, July 25, 1947

*Nutrition studies. I. Description of physical signs possibly related to nutritional status. H. R. Sandstead and R. K. Anderson.—p. 1073.

Nutrition Studies. This is the first of a series of reports to be issued by the Nutrition Section of the U. S. Public Health Service on the prevalence of nutritional deficiency and related factors in various areas of the U. S. In this paper the criteria used in the clinical evaluation of nutritional status are given. Physical signs possibly related to nutritional deficiency may be found as a result of examination of general appearance, winged scapulae, hair, eyes, skin of the face, lips, buccal mucosa, teeth, gums, tongue, thyroid, and skin in general. The outline used in the nutrition demonstration also lists signs suggestive of rickets and edema and includes a neurological examination.

QUARTERLY BULLETIN OF NORTHWESTERN UNIVERSITY MEDICAL SCHOOL

Vol. 21, Spring Quarter, 1947

*Work at high altitude. I. Plan of study and methods. T. E. Friedemann and A. C. Ivy.—p. 31.

Vol. 21, Summer Quarter, 1947

*Recent advances in hepatic and biliary disease. A. M. Snell.—p. 101.

*Work at high altitude. II. The effect of training and dietary restriction of thiamin and riboflavin on altitude tolerance and physical efficiency for work at a simulated altitude of 15,000 feet. S. C. Harris, A. C. Ivy, and T. E. Friedemann.—p. 135.

Vol. 21, Fall Quarter, 1947

*Work at high altitude. III. The production of lactic and pyruvic acids during work at ground level and at increasing altitudes to 15,000 feet. T. E. Friedemann, A. C. Ivy, S. C. Harris, B. B. Sheft, and V. M. Kinney.—p. 228.

Work at High Altitude. I. The effect of high altitudes on physical efficiency is a problem that has created great interest within recent years. During the war, plans were made at Northwestern University to study this problem. At the time the plans were formulated there was some concern over the fact that Army Barracks Ration A contained less riboflavin than the quantity recommended by the Food and Nutrition Board of the National Research Council. Therefore, a diet comparable to that of the Army Barracks Ration was used, and the primary purpose of the study was to note the effect of a diet low in thiamine and riboflavin on physical efficiency. It was apparent that the results would have significant bearing, not only on the military diet, but also on the civilian diet. The work tests, performed at high altitude, would have advantages over tests performed at ground level. First, they would indicate biochemical differences more readily; and second, they should have obvious applications to military and commercial aviation.

The investigation was carried on for a period of sixteen months. Seven young men were given a basal diet which was adequate in all essentials except thiamine and riboflavin. The subjects were maintained at weight equilibrium by prescribed exercises and various quantitative work tests. The experimental conditions, including diet and physical tests, are described in detail in this introductory article.

Hepatic and Biliary Disease. This review of the advances which have been made in the knowledge of hepatic and biliary disease during the war years is confined to the following three subjects: (a) the recent worldwide epidemic of infectious hepatitis, its sequelae, and the implications for the future; (b) observations on atrophic cirrhosis of the liver with particular reference to some of its obscure clinical manifestations; and (c) operations for carcinoma of the pancreas. The nutritional aspects of cirrhosis of the liver are given consideration. There are several reports which add strong support to the present conception of cirrhosis as a disease with a nutritional background, if only in the sense that dietetic factors render the liver vulnerable to hepatotoxic substances and virus infection. Since Patek's original plan of diet therapy was advanced ten years ago, there has been considerable revision in the treatment of cirrhosis of the liver. However, maintenance of an optimal state of nutrition is still the fundamental principle. The intake of protein and fat has been liberalized, and the use of methionine, given alone or in protein digests, may have its place. Some favorable results have been reported from the use of liver extract. The use of vitamins has remained unchanged. In connection with the postoperative care of patients with carcinoma of the pancreas, it has been noted that nutritional disturbances observed in the late postoperative period are less than anticipated.

Work at High Altitude. II. This article contains an analysis of the data on the work output of six young men who were trained to perform three rapidly exhausting types of work at ground level and at a simulated altitude of 15,000 ft. Tests were performed on the bicycle ergometer, with two 4-lb. dumb-bells, and with 50-lb. bar-bells. Other controlled exercises were also combined in a schedule designed to promote physical stamina and optimal development of all groups of muscles of the body. The basal diet was the same throughout and contained an average of 0.85 mg. of thiamine and 0.95 mg. of riboflavin. The subjects, who received this diet for several months, remained in good health without any evidence of physical deterioration as measured by the various tests at ground level and at high altitude. The results indicated that a program of physical training conducted at ground level can contribute to increased efficiency for work at high altitude. Consequently, such a program may, to some extent, take the place of acclimatization in mountainous regions.

Work at High Altitude. III. Two types of work on the bicycle ergometer were performed in this study. One represented "anaerobic" work, and the other "constant rate" work. Determinations of the pyruvic acid and lactic acid levels of the blood were made at various altitude levels, indicating the altitude at which the oxygen supply to the tissues could be maintained no longer by respiratory, cardio-vascular, and other physiological mechanisms.

REVISTA BRASILEIRA DE MEDICINA (Brazil)

Vol. 4, March, 1947

*Food patterns: food deficiency of the seven basic groups observed in workers of Rio de Janeiro. T. Botelho and H. B. deMello.—p. 188.

Food Patterns. Dietary histories, based on the consumption of the "Basic 7" as established by the War Food Administration Board of the U. S., were taken on 100 urban workers and fifty rural laborers in Rio de Janeiro. The

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Fluffy White Sauce

3 tablespoons Nucoa Margarine
3 tablespoons flour
1½ cups hot milk
¾ teaspoon salt
1 egg white

Melt Nucoa in heavy saucepan, add flour and salt. Stir until mixture bubbles. Add hot milk slowly, stirring smooth. Cook until thickened and smooth. Fold in stiffly beaten egg white. Yield: 2 cups.

This is de luxe white sauce—a newsy recipe for advanced class demonstration, and a base for sophisticated party dishes to serve in your own home.*

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results were compared to similar studies made in the U. S. It was found that the Brazilian diet was more deficient than that consumed in the U. S. In only two of the seven groups did the Brazilian diet compare favorably: (a) Group V, meat, eggs, and beans; and (b) Group VI, rice, bread, and cereals. This was because of the large amounts of black beans and rice used by the Brazilian laborers. The investigators suggest methods for improving the dietary. The production of soy beans and Brazil nuts should be encouraged; there should be a national nourishment policy; food industries should be given a priority on equipment; transportation should be improved; and the population should be given information concerning adequate nutrition. However, it must be remembered that economic factors influence food selection.

SCIENCE

Vol. 106, August 22, 1947

The mode of action of 7-methyl folic acid. G. J. Martin, L. Tolman, and J Moss.—p. 168.

Vol. 106, August 29, 1947

*Calcium and growth in aging and cancer. A. I. Lansing.—p. 187.
*Atherosclerosis and alimentary hyperlipemia. J. R. Moreton.—p. 190.

Calcium and Growth. In this paper the author has brought together data on changes in intracellular calcium as an important factor in both aging and malignancy. The various experiments discussed point to the probability that an organic calcium-binding complex of the cell cortex plays an integral part in the growth regulatory mechanism of cells. When growth stops, this calcium-binding complex is altered in such a way as to increase calcium-binding capacity. However, if the system is altered so as to decrease calcium-binding, growth does not cease, age changes do not occur, and the state of affairs exists that is associated with cancer.

Atherosclerosis and Alimentary Hyperlipemia. Investigations have been made which demonstrate that the physical state of the plasma lipids is the same during alimentary hyperlipemia as in the sustained hyperlipemic conditions predisposing the development of atherosclerosis. The author presents the theory that the cumulative effect of many fatty meals over a lifetime, by producing transient showers of large lipid particles in the plasma, may be the underlying cause of the lipid deposition in atherosclerosis. Circumstantial evidence to support this theory is as follows: (a) Atherosclerosis is rare in peoples who eat very low or nearly fat-free diets (for instance, the Chinese and Okinawans). (b) The disease decreased notably in Germany during the fat-shortage years following World War I. (c) Atherosclerosis is more common in obese, overnourished persons than in the lean and undernourished. (d) It is usually less severe and less common in chronic alcoholics, (who eat less, especially less fat) than nonalcoholics. (e) The disease is rare in wild animals which seldom, if ever, eat a meal containing the amount of fat found in the average human diet.

AMERICAN RESTAURANT

Vol. 31, August, 1947

*Service tailored to location.—p. 27.
*Portion control mathematics. G. L. Wenzel.—p. 30.
*Helping mothers relax. C. Killian.—p. 32.
Modern methods of cooking meats. J. A. Cline.—p. 34.
*Tucson takes a step in sanitation.—p. 46.

Vol. 31, September, 1947

*It's fun to be nice people. J. V. Malone.—p. 37.
Buy meat by grade. J. A. Cline.—p. 43.
*Cut prices? G. Wenzel.—p. 45.
*Gourmet's dream come true. F. G. Channell.—p. 120.

Service Tailored to Location. This description of the Wedgwood Inn, St. Petersburg, Florida, includes a number of pictures of the dining room and kitchen facilities. This new restaurant, which is unique in St. Petersburg for its personalized à la carte service, has installed equipment which is adaptable to a wide range of operations. Thermostatically controlled frying kettles and automatic ovens make it possible to serve as many as 200 people at a time.

Portion Control. Emphasizing the use of portion cups in portion control, the author gives examples of their value. He also includes a chart which shows how the cost of a number of salads can be controlled by using various sizes of portion cups.

Helping Mothers Relax. Hilaire's Restaurant in Portland, Oregon, is well-known for the interest it takes in serving children. Clever menus, designed specifically for children, child-size plates and prices, and seating arrangements for families are just a few techniques employed here to make "dining out" for the family a pleasure.

Sanitation in Tucson. Since 1942, the city of Tucson has operated a two-point sanitation program for its restaurants. It involves regular inspection of all restaurants, based upon definite inspection outlines, and calls for the regular examination of all food handlers. The factors considered in both restaurant inspection and in examination of food handlers are listed and discussed. Also mentioned are the procedures used by the health department in carrying out its program.

It's Fun to Be Nice. This review of the business and personnel policies of the Mill's Cincinnati Restaurant explains why the restaurant has such an outstanding reputation. In some detail the work of the restaurant is discussed. Several floor plans and pictures help to visualize the organization.

Cut Prices. Another discussion of food cost and portion control, this article deals for the most part with selection of fruits and vegetables. Specifications are given for various types of melons, blueberries, peaches, plums, avocado, Lima beans, green beans, corn, egg plant, and squash.

Gourmet's Dream. Of special interest in this description of the new Sky Club and restaurant in Mansfield, Ohio is the summary of the general service program of the organization. Thirteen points are listed which help to contribute to the basic aim which is "to serve the best possible food at the lowest cost to the patron, and to give cheerful, courteous, efficient service." The suggestions made can be applied to any group of food service employees.

BUILDINGS

Vol. 47, September, 1947

*Effect of cleaning materials on terrazzo.—p. 46.
*Background for floor maintenance. C. A. March.—p. 48.

Effect of Cleaning Materials. The National Bureau of Standards has studied the effect of several active ingredients of commonly used cleaning preparations on terrazzo. The action of soda ash and trisodium phosphate has been given particular attention. In general, the soda ash caused more damage that the trisodium phosphate. Similar tests which are now being made with a synthetic sulphonate seem

MEAT
And Nitrogen Balance

A negative nitrogen balance appears to be associated with many more pathologic states than has been heretofore suspected.

Nitrogen loss, commonly encountered in serious illness and after major surgery, is also observed after injury, bone fracture, or burns—conditions in which protein breakdown may reach alarming proportions.

Thus a serious chain of consequences may be initiated, since protein depletion impairs wound healing and union of fractures, predisposes to local and systemic infection, and retards recovery in general.

Nutrition authorities consider a high protein diet as the most effective and most physiologic therapeutic measure to achieve nitrogen balance.

Meat is an excellent source of protein not only because the contained protein is biologically complete, capable of satisfying the body's protein needs, but also because its protein content is high. In most conditions associated with negative nitrogen balance, oral feeding of protein foods is not only possible but desirable. For this purpose, meat is a valuable food since it is eaten with pleasure two or more times a day if necessary. Of utmost importance, especially in the presence of disease, all meat is from 96 to 98 per cent digestible.

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to indicate that this type of cleaner is safer for cleaning terrazzo than either soda ash or trisodium phosphate, provided it does not contain large amounts of other salts as impurities.

Background for Floor Maintenance. This review on floor maintenance includes discussions of floor seals, waxes and polishes, and floor matting. Advantages and disadvantages of various materials are given. A chart of methods of obtaining materials and equipment for floor maintenance is listed.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 3, September, 1947

*We must control our food costs A. M. Tracy.—p. 25.
*Satisfying the palate begins at eye level. E. A. Guthrie.—p. 27.

Controlling Food Costs. The problem of food cost control in colleges is receiving ever increasing attention. Anna M. Tracy, dietitian at Florida State University and past-president of A. D. A., discusses the important aspects of the subject and stresses cost control as a management tool. The control pattern must take into consideration menu making, cooking, amounts of food prepared, purchasing, control of depreciation, storeroom management, and control of employees. Although bookkeeping procedures vary, they should be in such a form that one can tell, before operation, what the day's cost will be. They should also record the various steps in the operations in terms of money. Included in this article are forms which illustrate the percentage distribution of gross expenditures, food expenditures, and labor expenditures which can be obtained when cost control methods are adequate.

Satisfying the Palate. The author, another A. D. A. member and director of Dormitory Food Service at Iowa State College, gives a number of suggestions on food preparation which are important in the service of appetizing, attractive meals.

FOOD INDUSTRIES

Vol. 19, September, 1947

*New emulsifiers for foods. N. F. Johnston and H. H. Favor.—p. 76.
Candies from sweet potatoes pack health-promoting values.—p. 85.
*Food freezers evaluated. G. W. Meek and van R. H. Greene, Jr.—p. 93.

Emulsifiers for Foods. The subject of emulsifiers is of great interest to the food industry. A series of bland, nontoxic emulsifiers has been produced to be used principally as emulsifying and whipping agents in cake batters. They are regarded as a major improvement in the science of cake baking. Although most emulsifiers used have been oil-soluble, and as a result have dissolved in the shortening, it has been found that a better emulsion and cake can be made when the emulsifier is hydrated and then added to the cake batter with the liquids instead of the fat. However, optimum results are obtained when hydrated emuslifiers are used in a batter along with the emulsifying type shortening; the emulsifiers in each phase combine to produce a practically perfect emulsion cake. Data on the cake formulas are given, along with illustrations of typical results obtained from the use of the emulsifiers. The success which these new food emulsifiers are meeting in the baking industry suggests their broader application in other food emulsions, such as salad dressing, ice cream, frozen foods, cheese, soups, sauces, gravies, condiments, flavors, fondants, nougats, chocolate, puddings, and desserts.

Food Freezers. This technical evaluation of food freezers contains information on the leading food freezing methods and their adaptability for any set of conditions. A performance yardstick is given in which the factors determining the relative suitability of a "system" are pointed out. These factors—versatility for freezing, materials handling costs, speed of freezing, initial cost, package, defrosting requirements, operating costs, and space requirements—are elaborated.

HOSPITALS

Vol. 21, September, 1947

*Taking complications out of job evaluation. J. D. Miller, Jr.—p. 38.
*Small hospital food cost control by a simple method. M. Gillam.—p. 66.
Formula compares costs of turkeys and chickens. Comment.—p. 72.

Job Evaluation. The methods used in industry for developing job analyses and job evaluations are often too technical and complicated to be used by smaller organizations. As a result, less complicated methods that are reasonably accurate and reliable have been worked out. The author includes a questionnaire which can be filled out by employees as an aid to making a job analysis. The aspects of job evaluation are considered also. Three concise summaries are included on the subjects of job analysis, job factors, and the advantages of a job evaluation and salary schedule system.

Food Cost Control. A simplified system of food cost control, to be used by small hospitals, is described. Instructions for the use of the various records are listed, and illustrations are included showing a daily food cost record, a daily receiving sheet, a monthly meal census, and a monthly summary of costs. The purchase order and the requisition sheet are described. Managerial cost control methods are suggested, and the value of standardized recipes is emphasized.

HOSPITAL MANAGEMENT

Vol. 64, August, 1947

*Rating scale for food service employe demonstrates value in tests.—p. 84.

Value of Rating Scale for Food Service Employees. This article is a report of the Institute on the Organization and Operation of the Hospital Dietary Department, held at the University of Michigan in June. The gist of several talks is given. One presented by Helen Mallory, director of dietetics at University Hospitals, Cleveland, told of the need and actual designing of the rating scale. Another talk by Elizabeth Perry, Cleveland City Hospital, was concerned with the results of putting the University Hospitals' rating scale into use in her dietary department. Other highlights of the Institute are also mentioned in this report.

HOTEL MANAGEMENT

Vol. 52, September, 1947

*Hiring the right man for the job. W. Byrd, Jr.—p. 49.
*Principles of kitchen layout. A. W. Dana.—p. 58.
*Increasing interest in the job. G. L. Hostetter.—p. 66.

Hiring the Right Man. Planned, careful interviewing is essential if the right man is to be hired for the right job. The object in interviewing is to try to match a person's characteristics and abilities with the requirements of the job to be filled. Therefore, the interview should be used to evaluate the attributes of a person that cannot be put on paper; other information can be obtained by means of an application for employment. The author gives ten points which are helpful in conducting interviews.

Principles of Kitchen Layout. This article, the fifth in a series, is concerned with receiving and storage problems. Subjects discussed are as follows: installing a freight elevator, disposing of garbage and rubbish, selecting the right scales, using trucks or skids, locating the store room

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properly, handling meat in storage areas, modern food handling equipment, and how to store perishables.

Interest in the Job. Employers are beginning to realize that material benefits alone are not sufficient to bring about the ideal in employer-employee relations. Experience has shown that it is the little things that bring about the harmonious atmosphere and unity of purpose of a group of employees in any business establishment. Giving employees a certain amount of responsibility, making them feel the importance of their job, and giving them recognition for their services are ways of improving job relations. The value of the services of employers' associations, such as The Employers' Association of Chicago, is pointed out.

THE HOTEL MONTHLY

Vol. 55, August, 1947

*Large resort hotel installs new kitchen equipment to meet post-war conditions.—p. 42.

New Kitchen Equipment in Resort Hotel. The Homestead Hotel of Hot Springs, Virginia, is completely renewing its food preparation and storage facilities. A new dishwashing department has been installed. A conveyer system, the starting point for which is adjacent to the service room, takes soiled trays of dishes to this dishwashing room which, because of its high ceiling and abundance of light and air, has helped to boost the morale of the employees. Storage facilities for food are now adequate. Unusual care is taken in handling of incoming supplies to guard against signing for sub-standard shipments and bringing vermin into the institution. All crated and cased items are opened in an isolated room, inspected for quality, removed from the original package, washed in running water if practical, and placed in special boxes made to fit the steel racks in storage refrigerators. These racks are pictured in the article. Other practices of this hotel which are helpful to employee and public relations are pointed out.

THE MODERN HOSPITAL

Vol. 69, September, 1947

*Travel is so broadening. M. W. Binner.—p. 58.
*Frozen foods, are they here to stay? J. McIntosh.—p. 112.

Travel Is So Broadening. The Children's Memorial Hospital of Chicago has carried out a plan of "Cook's tours" of the hospital for a number of years. Of special value in giving employees insight into the background of the institution and helping them to understand and appreciate the numerous problems involved in its management, these tours can be a definite aid to employer-employee relations. Suggestions for topics to be discussed in connection with the tours are given.

Frozen Foods. The weaknesses and advantages of the frozen food industry are discussed. The progress which is now being made in methods of handling frozen foods should help to promote quality. Frozen foods have proved their convenience, they are proving their quality, and they will prove their economy.

PERSONNEL JOURNAL

Vol. 26, September, 1947

*Informing employees. E. de la Ossa.—p. 104.

Informing Employees. Informing employees about the company for which they work and about the many other details connected with employment is vital to any employee relations program. By gaining the enthusiastic good-will of your employees, you promote the best possible public relations, and achieve a maximum efficiency at lowest cost. Eleven methods of informing employees are listed, and a few, including letters of welcome and employee manuals and reports, are amplified

PRACTICAL HOME ECONOMICS

Vol. 25, September, 1947

*A challenge to school lunch managers. O. M. Thomas.—p. 441.

Challenge to School Lunch Managers. Orpha Mae Thomas, assistant professor of institution management at Teachers College, Columbia University, presents the responsibilities of the school lunch manager in producing an attractive school lunch. Much progress can be made in the influence of the school lunch program on the life of the community if certain objectives are kept in mind. Attractive and tasty meals that are nutritionally adequate are a necessity. The standard of cleanliness can be emphasized in dress, equipment, and the preparation of food. The lunchroom provides an opportunity for practicing courtesy. Through the school lunch, new foods can be introduced into the child's diet. Cooperation can be taught through group activity, if student help is used in the cafeteria. In order to appraise one's efforts in these directions, certain observations can be made. Success can be measured to some extent in terms of the number of students who participate in the lunch program; by the cooperation of the supervisory and teaching staff of the school; by the effect of your ideas on food and food service on the habits of the community; and by your own enthusiasm.

WHAT'S NEW IN HOME ECONOMICS

Vol. 11, July, 1947

* Children's diet practices need supervision. J. D. Boyd.—p. 6.
How to can vegetables in tin cans. E. A. Wood.—p. 12.
First steps for a school lunch program. M. M. Morris.—p. 27.

Vol. 11, August, 1947

* How our adolescent girls are meeting nutritional standards. H. J. Lindley.—p. 12.
How to choose fresh fruits and vegetables. M. Pentland.—p. 14.
* Integration of school lunch and total school programs. B. M. McBride.—p. 21.

Children's Diet Practices. More thought should be given to the development of programs designed for the betterment of eating practices. Comparatively few children are living under conditions of optimum health and nutrition, mainly because of the indifference or ignorance of their parents. It is the duty of nutritional advisors to stress the importance and function of specific foodstuffs, such as milk and meat and their products, eggs, vegetables, and fruits and to talk less in terms of the needs for specific vitamins, minerals, and proteins. Then, if children were taught good food habits, both in the home and in the school, there would be a noticeable health advancement.

Nutritional Status of Adolescent Girls. A nutritional survey was made in a Philadelphia suburb to ascertain how adolescent girls were meeting their dietary requirements. A simple method of testing was used. Charts were compiled which gave in percentages the amounts of specific foods needed to meet the entire day's requirement for each nutrient. Results showed that the greatest deficiency in the diets of these girls was in the caloric intake. Over half of the girls were receiving insufficient protein. Their diets were also lacking in iron, thiamine, ascorbic acid, and riboflavin.

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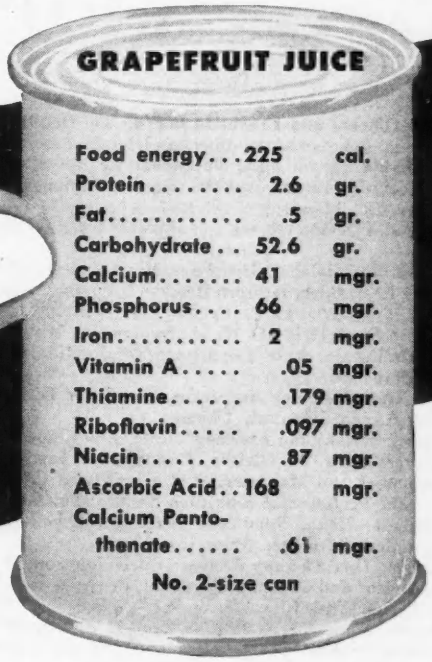

CONTINUING RESEARCH PROJECT conducted at several of America's leading universities is now in its sixth year. This project is sponsored by the National Canners Association and the Can Manufacturers Institute.

"Canned Foods in the Nutritional Spotlight," the new booklet, condenses much of this research, tabulates nutritive values by individual foods, and charts foods by rank as sources of six chief vitamins, three minerals, fat, protein and carbohydrates. It is concise nutritional reference material on 41 commercially canned foods. (For free copies, address: Can Manufacturers Institute, Inc., 60 East 42nd Street, New York 17, N. Y.)

In using these figures, remember that they are *net-after-processing*, giving the ready-to-heat-or-eat values for foods in cans.

It is evident from these studies that the lengths to which today's canning industry goes to protect and preserve nutritive elements show impressive results. We believe you will agree that, on their merit, canned foods should be recommended as a means of promoting better national nutrition.

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News Notes

1947–48 Officers and Executive Board. On October 17, at the Annual Banquet of the American Dietetic Association in Philadelphia, the outgoing officers and section chairmen of the Association turned over the reigns of administration to a new group. Members of the 1947–48 Executive Board, which includes elected officers and appointed section chairmen are:

President: Dr. Helen A. Hunscher, Head, Department of Home Economics, Western Reserve University, Cleveland.

President-Elect: Helen E. Walsh, Supervising Nutritionist, California State Department of Public Health, San Francisco.

Vice-President: Beulah Hunzicker, Director of Dietetics, Presbyterian Hospital, Chicago.

Secretary: Dr. Lillian Storms Coover, Ames, Iowa.

Treasurer: Fern W. Gleiser, Professor of Institution Economics and Management, University of Chicago.

Chairman, Professional Education Section: Dr. Ercel S. Eppright, Head, Food and Nutrition Department, Iowa State College, Ames.

Chairman, Diet Therapy Section: Doris Johnson, Ward Supervisor and Teaching Dietitian, Presbyterian Hospital, New York City.

Chairman, Food Administration Secion: Phyllis Rowe, Director, School of Dietetics and Dietary Service, The Johns Hopkins Hospital, Baltimore.

Chairman, Community Nutrition Section: Adelia Beeuwkes, Assistant Professor of Public Health Nutrition, School of Public Health, University of Michigan, Ann Arbor.

Developments in Hospital Administration Education. Volume I, Number 1 of *Hospital Administration Review* was published in September. The first publication of its kind in this field, it will serve as the organ of the hospital administration course given at Northwestern University, Chicago, and will include contributions, term papers, seminar projects, and theses of students, usually in condensed form. The first issue was devoted mainly to introductions of the benefactors of the Northwestern course, the Advisory Council, the director, the faculty, and the twenty-eight students who have already received degrees in hospital administration from this institution.

Also at Northwestern University the first Greek letter fraternity for hospital administration students has been formed. Its twenty-five charter members chose the name Alpha Delta Mu. Its first president is John E. Paplow, whose wife, Marguerite Paplow, is a dietitian and Assistant to the Educational Director of A.D.A. Students in hospital administration courses in other universities have been invited to form other chapters.

Awards to Hawaiian Home Economics Students. Hawaiian Pineapple Company has announced the establishment of a Travel Award Foundation. This foundation will award trips to the mainland each year to two home economics students at the University of Hawaii. The trips will be four weeks in length and will be planned so that the students may attend the annual conference of the American Home Economics Association. Other points on their itineraries will include visits to educational institutions, large department stores, and manufacturing plants. In addition, they will spend approximately a week working at the Hawaiian Pineapple Company's San Francisco headquarters testing recipes, preparing material for photographs and illustrations, and doing routine work under the direction of the home economics director. Candidates for the awards will be selected on the basis of scholarship, extra-curricular activities, personality and appearance, health, and ability to work with other people. The first two recipients of the Travel Awards will be selected March 15, 1948.

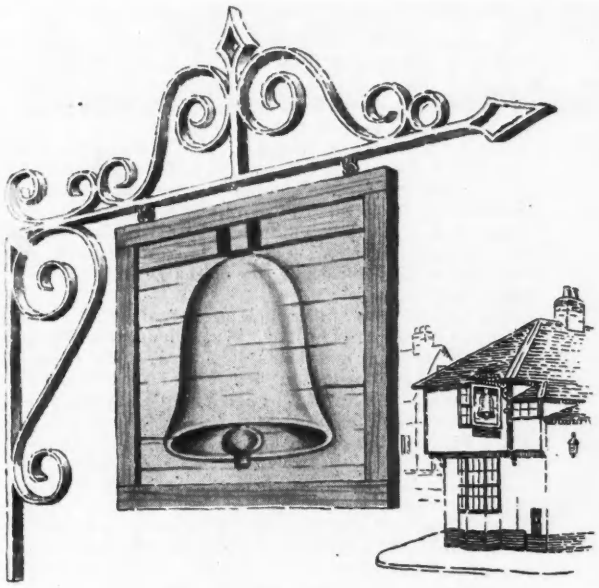
West Virginia School Lunch Work Shop. Enthusiasm for the school lunch program was raised above its normally high level in West Virginia by a work shop held at West Virginia Institute of Technology, Montgomery, during the week preceding the opening of school.

The first day was devoted to registration, assigning of sections, and general talks on philosophy of education and techniques recommended in modern education. These talks were presented by state supervisors of homemaking and elementary and high school education. Such an introduction helped the participants to see some of the special problems in school lunch operations and to suggest possible solutions in keeping with currently recommended educational procedure. It helped school lunch supervisors to discover ways of using educational techniques in harmony with those used in other branches of the curriculum.

In order to direct attention of all present to major aspects of the program and at the same time obtain the advantage of discussion in small groups, those in attendance were assigned to one of three sections to attend meetings on (a) menu making and food preparation, (b) school lunch records, and (c) nutrition education in elementary schools. Three section meetings were held simultaneously on these three topics for three successive mornings, thus making it possible for everyone to attend one of the group discussions on each topic. Leaders of the sections took notes and prepared summaries of the contributions made by discussions and laboratory work of the three groups.

The sections on menu making and food preparation were responsible for the lunches served on the days they met. Members planned, prepared, and served the meal with the assistance of two cooks. Menus each day were nutritionally complete as evidenced both by their compliance with Type A menu patterns and with a nutritive analysis computed by the section responsible for the lunch. In addition, they were tasty, used foods in local abundance, were economically priced, easy to prepare, and included as many of the commodities likely to be distributed by the Department of Agriculture as information available at that time revealed. Each day, too, special devices were used to demonstrate ways in which pupils can be encouraged to eat the foods served and clean their plates.

Two afternoons of the three days on which section meetings were held in the morning were assigned to the State Department of Health to present public health aspects of the school lunch program. The third afternoon was given



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over to the area home economist of the Department of Agriculture so that she could interpet the program in general and give special emphasis to nutritional aspects of menu making. The fifth day was devoted to a summary of the week's work and explanations of the following recommendations for county supervisors of school lunches:

I. Recommendations of food preparation sections.
   A. Develop a county plan of work.
   B. Work with other supervisors in the county.
   C. Organize training programs for school lunch personnel based on needs.
   D. Spend approximately one week of each month on a training program.
   E. Send to the state office comments on tentative outlines for such a training program.

II. Recommendations of school lunch records sections.
   A. Save time and money by filling out required forms fully, accurately, and promptly.
   B. Keep careful records of amounts used of abundant foods to show that the program is fulfilling its aims.
   C. Keep complete records of all expenditures so that all of the credit due the state for "matching funds" can be totaled accurately.

III. Recommendations of nutrition education sections.
   A. Enlist the cooperation of community groups outside the school to insure more local support for the program.
   B. Encourage home meals of a nutritionally complete character.
   C. Encourage the use of outlines for elementary and high schools prepared by different sections attending this meeting.—*Katherine Connelly Wisely.*

School Lunch Booklets. Because of the wide need for practical help with details of school lunch programs, the Department of Agriculture is currently preparing and issuing as rapidly as possible booklets dealing with various phases of school lunch management. Newest in this series are: *Quantities of Food for Serving School Lunches*, prepared by the Bureau of Human Nutrition and Home Economics, and *Small Equipment for the School Lunch*, by the same Bureau in cooperation with the Food Distribution Programs Branch of the Production and Marketing Administration.

The food quantities booklet features a table which lists foods; tells the approximate size of each serving of each food and the approximate quantity to buy for 100 servings; and adds in a final column some special points on yields and weight and measure equivalents. A second table gives information on weights and measures of commodities marketed on a quantity scale.

The small equipment booklet also presents its information in tabular form. Equipment articles are listed in three groups—food preparation, serving, and cleaning and maintenance. Suitable types of articles are described, sizes designated, and the number of each article recommended is given in terms of five different sized groups, from a school serving 50 to 75 pupils to one serving 350 to 500. The booklets are available free from the Bureau of Human Nutrition and Home Economics, Department of Agriculture, Washington 25, D. C.

Conference on Restaurant Management. On September 22 and 23, the Fourth Annual Conference on Restaurant Management was held at Ohio State University, Columbus. The first day was devoted to discussion of matters pertaining largely to restaurant associations, while on the second day topics of more general interest were discussed. Harold K. Schellenger of Byer and Bowman Advertising Agency spoke on "The Community and the Restaurant Industry," and Dr. Paul Lehoczky, chairman of the Department of Industrial Engineering, Ohio State University, discussed "Constructive Labor Relations." A panel on an insurance program for Ohio restaurants was also conducted in the morning. In the afternoon, a demonstration on making cherry pies was given, while other subjects included food cost control and simplified menu planning.

Public Conference on Nutrition. On October 1, the Chicago Medical Society sponsored a Public Conference on Nutrition. Planned for the lay public, some of the leading workers in the field of nutrition were included on the program. Copies of all of the talks will be printed a little later as the "Proceedings of the Public Health Conference on Nutrition" and will be obtainable free of charge from the Milk Foundation, Chicago.

The "Proceedings" will include the following talks: "Appetite and Hunger," by Dr. A. C. Ivy, University of Illinois; "The Food Industry and the Public," by G. A. Sloan, president, Nutrition Foundation; "The World Food Situation: Yesterday and Tomorrow," by Dr. F. G. Boudreau, director, the Milbank Foundation and chairman, Food and Nutrition Board of the National Research Council; "The Soil and Nutrition," by Dr. Jonathan Forman, editor, Ohio State Medical Journal; "Food for the Aged," by Dr. Clive McCay, Cornell University; "Diet and Climate," H. H. Mitchell, University of Illinois; "Diet and Cancer of the Liver," Dr. H. P. Rusch, director, McArdle Memorial Laboratory for Cancer Research, University of Wisconsin; and "An Anthropological Approach to Nutrition Problems," by Dr. Vilhjalmur Stefansson, artic explorer.

Meeting. The American Academy of Allergy will hold its annual convention at the Hotel Jefferson, St. Louis, on December 15 to 17. The program and the scientific and technical exhibits have been arranged to cover a wide variety of conditions where allergic factors may be important, and papers will be presented which deal with the latest methods of diagnosis and treatment as well as the results of investigation and research.

Dietetic Interns Complete Training. At a simple but impressive program held in the launge of the Nurses' Residence on July 10, seventeen dietitians who had completed their year of internship in dietetics at *St. Marys Hospital*, Rochester, Minnesota, received certificates and insignia. Earl C. Wolf, procurement officer of the hospital, presided, and presentation of the class was made by Sister Mary Victor. Certificates and insignia were awarded by Dr. Russell M. Wilder of the Mayo Clinic.

Dr. Mandred W. Comfort, also of the Mayo Clinic, gave an address in which he traced the history of dietetics, emphasizing the fact that as an art, dietetics is very old, but as a science, it is relatively new. Immediately following the exercises, a reception was held.

Dietitians who received certificates were: Inez D. Cardoni, Scranton, Pennsylvania; M. Patricia Fogarty, West Pittston, Pennsylvania; Eleanor Gebler, Latrobe, Pennsylvania; Marily M. Hagg, Stony Ridge, Ohio; Elizabeth Hixon, Ames, Iowa; Patricia M. Kennedy, Syracuse, New York; Patricia McCunniff, Antonito, Colorado; Mary Elaine Megley, Holbrook, Massachusetts; Ann Marie Puchner, New Ulm, Minnesota; Darleen Pullins, Council Grove, Kansas; Marie Louise Smith, Oklahoma City, Oklahoma; Sister Annella, O.S.F., Springfield, Illinois; Sister Eleanor Marie, Hartford, Connecticut; Sister Mary Duffany, Winooski, Vermont; Sister Jolene, O.S.F., and Sister Thomas Aquinas, O.S.F., both of Springfield, Illinois.

In Los Angeles, at the *Veterans Administration Hospital*, nine dietetic interns completed their year's work in October. They are: Betty Jane Baird, Gwendolyn Joyce Castel, Adelene Dorward, Virginia Gertmenian, Clara Stella Kelly, Billie June Naylor, Vivian Marie Primising, Kathryn Tondreau, and Quida Neimer.

New Dietetic Interns. In June, *The Johns Hopkins Hospital*, Baltimore, Maryland, admitted twenty-one dietetic

Morning Moods... by KEN RUKER

Worried

about Junior's monthly report? ("Effort, poor. Seems to lack interest.")

Check up

on Junior's breakfast! Child, or adult, the MIND works better when the body is well nourished!

OFF-TO-A-GOOD-START BREAKFAST

...for good health and good marks!

A GENEROUS BOWLFUL* of Grape-Nuts Wheat-Meal with milk and sugar supplies 200 calories and 11% of the protein** required daily by an adult. 21% of the calcium... 13% of the iron... 12% of the riboflavin... 20% of the thiamine ... and 11% of the niacin.**

*Grape-Nuts Wheat-Meal (1 oz.), milk (4 oz.), sugar (1 tsp.)
**Protein based on 70 g., niacin based on 15 mg

P.S. Hot or cold, EVERY POST CEREAL is either WHOLE GRAIN or restored to WHOLE GRAIN VALUES in the important nutrients: iron, niacin, and thiamine.

POST CEREALS ARE PRODUCTS OF GENERAL FOODS

interns, thus bringing the total enrollment of the course for this year up to thirty interns.

The *University Hospital, University of Minnesota*, Minneapolis, has announced that ten dietetic interns will be trained in that institution this year. Twelve completed training this summer.

Appeal for Journals for Finland. The American Friends Service Committee, which recently visited Finland, has reported that Finland has an excellent and scientifically minded technical institute, Teknillinen Korkeakoulu. During the war its library was bombed and totally destroyed, and now a special appeal is being made for contributions of scientific and technical books and periodicals from the U. S. Anyone who has back copies of the JOURNAL which she would like to contribute to this institution should address them to: Legation of Finland, 2144 Wyoming Avenue, N.E., Washington, D. C. The Finnish Ambassador will see that they are forwarded. All packages should be marked for the Institute of Technology, Helsinki.

New Bulletin. The mimeographed release issued by the National Society for Medical Research has been replaced by a printed periodical titled *Bulletin*. It will appear bimonthly and will be devoted to furthering the purposes of that society in combating the anti-vivisection forces.

Copper and Brass Destructive to Ascorbic Acid. Experiments conducted by the Department of Agriculture have shown that copper and brass utensils are particularly destructive of ascorbic acid and a warning has been issued against the use of copper or brass strainers in straining citrus juices or tomatoes. They also suggest that citrus juice not be strained at all, for considerable ascorbic acid remains in the pulp which is discarded after straining.

Milk Requirement After Fifty. Studies at the Iowa Experiment Station have shown that many people of fifty years or older, especially women, show a demineralization of the skeleton, known as senile osteoporosis. This condition may come from too little calcium in the diet and often leads to broken bones. Some investigators have suggested that many an old-age break, supposedly resultng from a fall, actually is the cause of the fall—that is, the weakened bone breaks and causes the person to fall. At the Iowa Station recent studies of women over fifty showed that they usually drink only a cup of milk a day, while they need at least a pint to furnish enough calcium, protein, and phosphorus for the proper upkeep of their bodies. The studies also showed that these older women had not lost their ability to store calcium and other minerals, contrary to common belief.

New Blends of Fruit Juice. New blends of fruit juice are being studied at the New York State Experiment Station, Geneva, New York. Dr. Carol Pederson has reported fine flavor and color particularly from a combination of apple juice blended with 22 to 25 per cent black and purple raspberry juice, and an apple-cherry juice containing 40 to 40 per cent Montmorency cherry juice. Dr. Pederson states, "The possibilities of blending apple juice with the juice of grape, plum, peach, pear, strawberry, elderberry, cranberry, and other fruits are unlimited." Apple juice gives the body and character to a blend, diluting the harshness of some fruits and the strong flavors of others.

To obtain a juice with the characteristics of the original fruit, different types of processing must be used with different fruits. Grapes are hot-pressed for juice, and apples are cold-pressed, while more satisfactory juices may be obtained from many of the small fruits, such as raspberries, strawberries, and cherries, if they are pressed after freezing and thawing. Cherry and plum juices require clarification, although this is not true of most other juices.

1947 Fruit Crop. If weighed, the total weight of the deciduous fruit crop this year would be slightly more than 10 million tons. Taken separately, grapes, apples, and peaches, would be the heaviest, and strawberries, plums, and cranberries would weigh the least.

In contrast, all of the citrus fruit crops for the 1946–47 season, if weighed together, would total almost 8 million tons. Despite the rapid increase in citrus production and consumption, it still falls somewhat short of the total deciduous fruit production. Prospects, however, are that it may equal or even surpass deciduous production in the next decade. When figures are broken down, it is plain that oranges weighed the most, grapefruit next, followed by lemons, limes, and tangerines.

News of State Associations

California Dietetic Association. An announcement was recently made by the California Dietetic Association of the opening in September of a central office for the Association. It will be in Los Angeles at 635 South Kenmore Avenue. They will share space with the Hospital Council of Southern California.

Maryland Dietetic Association. During the summer months the Community Nutrition Section completed work on a bulletin entitled "Eat Your Way to Health." The project was undertaken at the request of the Maryland State Department of Health in response to a growing need for such material for use in the tuberculosis hospitals of the state.

The Maryland Association will act as the hostess club in sponsoring the annual dinner of the business and professional women's clubs in Baltimore on November 8.

Minnesota Dietetic Association. Newly elected officers for the Minnesota Dietetic Association for 1947–48 are: President-Elect, Hortense Allen, Mayo Clinic, Rochester, and Secretary, Jean Finkenbinder, University Hospital, Minneapolis.

The *Head of the Lakes Dietetic Association* entertained on August 5 at the Duluth Athletic Club in honor of Astrid Jacobson, a dietitian from Stockholm, Sweden, who spent part of her vacation in Duluth. Miss Jacobson teaches dietetics at Teachers' Training College, Stockholm, and nutrition and dietetics to student nurses at Sophia Hemmet Hospital, Stockholm.

Ohio Dietetic Association. The summer issue of the *Ohio Dietetic Association News* was headlined "Re: Recruiting," and featured articles on ways to attract girls to the profession of dietetics.

On September 25 the *Cincinnati Dietetic Association* cooperated with seven other organizations of that city and the Cincinnati Board of Health in conducting a conference on food handling.

Pennsylvania Dietetic Association. The *Philadelphia Dietetic Association* opened its 1947–48 program with an indoor supper at Drexel Dormitory on September 16. At that time plans of the various sections for the coming year were announced by the chairmen. Following these reports new members of the group were introduced.

Representatives from twenty-six countries attended the International Triennial Post-war Conference of the International Council of Women from September 11 to 17 in Philadelphia. Arrangements for the gathering were made by the Philadelphia Federation of Women's Clubs, and the Philadelphia Dietetic Association, as one of the federated clubs, sent two representatives—Ardenia Chapman and Grace Nadig.

Officers for the coming year for the *Pittsburgh Dietetic Association* are: President, Mary Borland, Children's Hospital; Vice-President, Clarice McCullough, Magee Hospital; Secretary, Inez White, Carnegie Institute of Technology; and Treasurer, Nancy J. Phillis, Shadyside Hospital. The Pittsburgh Association held the first meeting of the year at the Allegheny General Hospital on September 10.

*"***Bearing lamps, we shall find the way.***"**

Down through the ages mankind has sought more light, more understanding to explain the facts about our complex physical universe . . . to let humanity walk erect and unafraid.

Today the inquiring mind—represented by the research scientist—is rapidly extending the boundaries of knowledge on all frontiers. To shed new light on the behavior and potentialities of one of the great carbohydrates, sugar, the sugar industry established the Sugar Research Foundation.

Recognizing that only through objective studies can true progress be achieved, this international non-profit group has been free to set up a program of wide scope. Its aim: to discover the *facts* about sugar and make them freely available.

Now extending into the fields of medicine, biology, dentistry, organic chemistry, micro-biology, physiology and numerous technologies, dozens of independent investigators at universities and laboratories are working under Foundation grants-in-aid.†

By making possible long needed experiments to fill gaps in our knowledge, and by systematically collating all available information, it is hoped that sugar may eventually have a more clearly defined place in the diet and broader usefulness as an industrial raw material.

†Information concerning the organization and progress of this program will be sent on request.

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News about Members

The following members of the American Dietetic Association have recently accepted new positions and appointments:

Mildred A. Baker is now director of food service at the University of Arizona, Tucson.

Inez A. Bernor has accepted a position as cafeteria supervisor in the high school in Beverly, Massachusetts.

Margaret Blaylock is a new member of the staff at the University of Kansas Medical Center, Kansas City, Kansas.

Juanita Bradley, on September 15, became therapeutic dietitian at Huron Road Hospital, Cleveland.

Kathryn L. Bruning has left the Veterans Administration Hospital, Ft. Benjamin Harrison, Indiana, to join the dietary staff of Saginaw General Hospital, Saginaw, Michigan.

Dorothy Clymer recently moved from Richmond, Virginia, to New York City, where she is employed by the New York Hospital.

Lorena Croft has been transferred by the U. S. Public Health Service from Lexington, Kentucky, to Fort Worth, Texas.

A. Elizabeth Crozier, after receiving her master's degree at Columbia University, has accepted a position as dietitian in charge of the Metabolism Ward, The Johns Hopkins Hospital, Baltimore.

Berdean Edwards is now on the staff of the Children's Hospital Society in Los Angeles.

Alice Katherine Faulkner has left the Westchester Division of New York Hospital, White Plains, New York, to accept a position at the Rochester General Hospital, Rochester, New York.

Sina Faye Fowler has resigned from the U. S. Public Health Service and is now connected with the Test and Development Section of the U. S. Navy Supply Corps, Bayonne, New Jersey.

Elizabeth Garden has joined the faculty of Drexel Institute, Philadelphia.

Marjorie Ann Hartnell recently became a member of the dietary staff at Mercy Hospital, Dubuque, Iowa.

Marjorie Henderson is now at Good Samaritan Hospital, Portland, Oregon.

Ruth Humboldt has left Milwaukee County General Hospital to accept a position on the staff of Muirdale Sanitorium, Milwaukee.

Katherine Johnson, formerly executive director of A.D.A. has moved from Vancouver, Washington, to Juneau, Alaska, where her husband will be connected with the Reconstruction Finance Corporation.

Vivian Irene Johnson is a new member of the dietary staff at Wesley Memorial Hospital, Chicago.

Virginia L. Jones recently accepted a position with Memorial Hospital, Charlotte, North Carolina. She was formerly at People's Hospital, Akron.

Valdis Knudson on August 18 began work as head dietitian, Permanente Foundation Hospital, Oakland, California.

Margaret Kral is assistant dietitian at the Hanna House Unit, University Hospitals, Cleveland. She was previously on the staff at Shadyside Hospital, Pittsburgh.

Libuse Kriz now has her own tea room in Lawrence, Kansas. It is named "The Castle Tea Room."

Ernestine Latimer recently left for the Phillipines, where she will be at Silliman University, Dumaguete.

Elaine Loseke became a member of the staff of Paterson General Hospital, Paterson, New Jersey, on September 1.

Avis June Lynn has accepted a position as assistant dietitian, Mounds Park Hospital, St. Paul.

Kathleen Bolingbroke Marx is therapeutic dietitian at Vassar Brothers Hospital, Poughkeepsie, New York.

Eleanor L. McKnight is now nutritionist with the Illinois Department of Public Health.

Alene Norton has resigned her position as dietitian, St. Mary's Hospital, Quincy, Illinois, and has moved to Iowa City, Iowa, where she will be manager of the Hillcrest Coffee Shop of the Dormitory Food Service of the State University of Iowa.

Claire Winston Osborn is a new member of the faculty of the Department of Foods and Nutrition, Michigan State College, East Lansing. She was previously at the University of Nebraska, Lincoln.

Chloe Robinson has moved from New Orleans to Memphis, where she is chief dietitian, Baptist Memorial Hospital.

Amanda Rosenquist is now on the faculty of the Home Economics Department, Nebraska State Teachers College. Chadron. She was formerly at Western Illinois State Teachers College, Macomb.

Virginia Gorrie Rourke has accepted a position as dietitian in charge of private tray service at Vassar Brothers Hospital, Poughkeepsie, New York.

Frances Lee Sanders has been transferred by the Veterans Administration from New Orleans to Alexandria, Louisiana.

Essie B. Schneider is now employed at Salem Deaconess Hospital, Salem, Oregon.

Delilah H. Siler has left DePaul Hospital, Norfolk, Virginia, to accept a position with Rex Hospital, Raleigh, North Carolina.

Mary Batson Simon is now on the staff of Fairmont Hospital, San Leandro, California. She was previously at Orange County Hospital, Orange, California.

Sister Catharine Clare has been transferred to St. Joseph's Infirmary, Louisville, Kentucky.

Sister Francella recently came to St.Vincent's Hospital, Green Bay, Wisconsin, from St. John's Hospital, Springfield, Illinois.

Sister Grace Marie is in Sioux City, Iowa, this year, where she will be instructor in nutrition and chemistry at Briar Cliff College. She was formerly at Sacred Heart Hospital, LaMars, Iowa.

Doris E. Smith has joined the faculty of Syracuse University as instructor in foods and nutrition.

Mildred Stirratt has returned to her position as therapeutic dietitian, Nopeming Sanitorium, Nopeming, Minnesota. She was recently separated from the Army.

Mary Alice Streator has resigned from the Winter Veterans Administration Hospital, Topeka, Kansas, and is now on the staff of the Atchison, Topeka, and Santa Fe Hospital, also located in Topeka.

Maxine Turner in September became nutrition consultant for the Millers National Federation in Chicago. Miss Turner was Community Nutrition Section Chairman of A.D.A. last year.

Marguerite Vesely is a new staff member of the Pittsburgh District Dairy Council.

Leota Walters is employed at Mennonite Hospital and Sanitorium, La Junta, Colorado.

Virginia Louise Weilert became assistant dietitian at Meadowbrook Hospital, Hempstead, New York, on September 1.

Katherine Connelly Wisely has been transfered from the New York City Office of Marketing of the Department of Agriculture to the Northeast Regional Office of the Production and Marketing Administration, New York City. Her new territory will cover thirteen states in the New England and Middle Atlantic areas.

Dallis Nadine Worthy has accepted an appointment at the Oschner Clinic Foundation, New Orleans, Louisiana.

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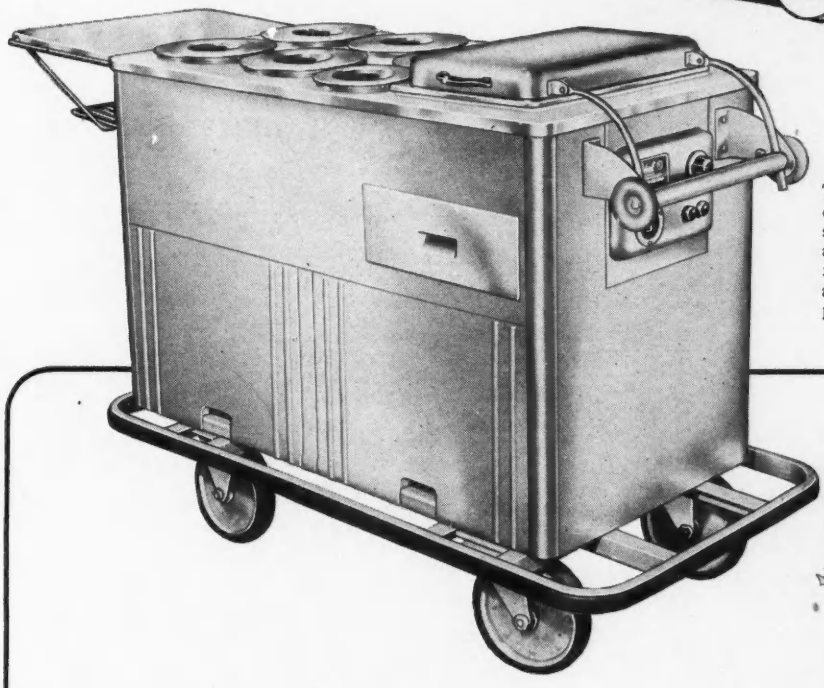

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Announcements of the following marriages have been received in the JOURNAL office:

Lois Anderson of Denton, Texas, recently became Mrs. M. "Cy" Clayton of Bryson, Texas.

Dorothy Bartelme was married on July 9 to John Lewis Hensien of Detroit. She was formerly head dietitian, St. Mary's Hospital, Duluth.

Emilie Brutinel in June became the bride of Don Hamill of Lakewood, Ohio.

Frances Houck is now Mrs. Harold R. Flohne and is living in Waterbury, Connecticut. Before her marriage she was on the staff at St. Margaret's Hospital, Kansas City, Kansas.

Mary Ellen Johnson was recently married to George Payne. She is employed at Children's Orthopedic Hospital, Seattle, Washington.

Frances Langenbacher August 23 became Mrs. Harold Rebman at the Church of the Covenant in Cleveland. She has resigned her position with Mount Sinai Hospital of that city.

Mildred Larsen was married in Honolulu on July 1 to Eugene Bruce. They have since moved to Kansas City, Missouri, where Mr. Bruce is teaching Spanish at Rockhurst College.

Marjorie Lemell, co-owner of Friends Restaurant, Arkansas City, Kansas, recently became the bride of George H. Fuller, Wichita, Kansas.

Marguerite Jane McLeroy is now Mrs. Claude A. Richardson, Jr., of Denton, Texas. Before her marriage she lived in Dallas.

Marilyn Miller, formerly dietitian at St. Luke's Hospital, Kansas City, Missouri, is the bride of Henry Meiners, superintendent of Cushing Hospital, Leavenworth, Kansas.

Gertrude I. Schaefer became Mrs. Paul S. Chapman on July 18. The wedding took place in Bangor, Maine.

Ann Esther Singer recently resigned from the dietary staff at Michael Reese Hospital, Chicago, to become Mrs. Bernard A. Cohen of Jackson, Mississippi.

Marian Swedish was married on June 14 to Guilbert W. Meier.

Announcements received in the Journal office of children recently born to ADA members include the following:

Mr. and Mrs. T. J. Burgess are the parents of a boy, William Thomas, born July 28. Mrs. Burgess before her marriage was Nancy Ford.

Patricia Putnam Davis on September 4 became the mother of a son, born in Emporia, Kansas.

Mr. and Mrs. Charles Edward Jay announce the birth of a daughter, Frances Marianne, on July 12. Mrs. Jay's maiden name was Amy Louise Myers.

Evelyn Hemler Mahoney on September 10 became the mother of a son, Kevin Michael. Mrs. Mahoney was formerly therapeutic dietitian at Alexian Brothers Hospital, Chicago.

A son, George James Roark, III, was born to **Jean Schwartz Roark** on August 3 in Pensacola, Florida.

News of Advertisers and Exhibitors

S. Blickman, Inc., has announced that a complete line of institutional urns for making coffee which incorporates the "Tri-Saver Coffee System" is now available. This includes single urns, combination urns, and three-piece batteries. These urns and batteries can be supplied in capacities from 20 to 60 gal. for each urn; a three-piece institutional battery has a capacity for serving 2000 persons at one time. . . . The *National Dairy Council* has issued a new booklet, *Newer Knowledge of Cheese*, which is a reference book including such topics as classification of cheeses and processes used in manufacturing various types of cheese. Tables supply information as to the characteristics of the different classes of cheeses and their nutrient content. This is a companion booklet to *Newer Knowledge of Milk* brought out last year by the National Dairy Council. . . . The 1947 edition of *Parergon* (work by the side of work), published by *Mead Johnson and Company*, includes illustrations and reproductions of 1000 examples of creative art by contemporary physicians. . . . *General Foods Corporation* has announced that two products long absent from the market because of the war can now be expected to be in better supply. Minute Tapioca became available on the east coast during September, and distribution of stocks to the rest of the country is expected to be complete by the first of the year. Before the war, most of the tapioca came from Java, and with the Japanese invasion, all shipments were halted. To date they have not been resumed, but a new source—Brazil—has been developed. As much as a million pounds of tapioca flour per week are now being received in this country from Brazil. The second product, Log Cabin Syrup, another wartime casualty, will soon be available in better than prewar quantities, now that sugar controls have been lifted. A national advertising campaign is planned to spotlight its return to the market.

State Nutrition Services

A report of the U. S. Children's Bureau in the July issue of *The Child* indicates that during the fiscal year ending June 30, 1947, there was a wide variation in the plans of various states for providing maternal and child health services under the Social Security Act. In regard to nutrition, forty-two state plans made provision for a total of ninety-nine nutritionists. Of these, nine were designated as directors, forty-one as consultants, and forty-nine as nutritionists. One state employed a physician as director of nutrition service. Thirty-three states placed the nutrition unit in the Division of Maternal and Child Health and in four additional states the nutrition personnel were listed with the maternal and child health personnel; in five states the nutrition service was in a separate unit responsible to the state health officer. Nutrition service was under the local health administration in three states, under health education in two states, and under the Division of Preventive Medicine in one state. Eight states had plans for post-graduate education for ten nutritionists each for periods of from six weeks to one academic year.